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THE
UNIVERSITY OF KANSAS

LAWRENCE

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ANNUAL CATALOG

1916-1917

Bulletin of the University of Kansas, Vol. 18, March 15, 1917.

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ANNUAL CATALOG OF THE UNIVERSITY OF KANSAS,

Embracing the following separate sections:

- I. General Information.**
- II. Graduate School.**
- III. College of Liberal Arts and Sciences.**
- IV. Engineering School.**
- V. School of Fine Arts.**
- VI. School of Law.**
- VII. School of Pharmacy.**
- VIII. School of Medicine.**
- IX. School of Education.**
- X. Summer Session Division.**
- XI. Extension Division.**
- XII. The Divisions of Athletics, Libraries, Museums, Publications, State Service Work, University Surveys.**
- XIII. Register of Degrees conferred and students in residence during the year.**

Copies of the Catalog or of any of its separate sections will be sent upon application to

**THE REGISTRAR, UNIVERSITY OF KANSAS,
LAWRENCE, KANSAS.**

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ANNUAL CATALOG

1916-1917

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STATE BOARD OF ADMINISTRATION OF
EDUCATIONAL INSTITUTIONS.

MR. ED. T. HACKNEY, *President*, Wellington..... Term expires 1917
MR. EDWARD W. HOCH, Marion..... Term expires 1919
MRS. J. M. LEWIS, Kinsley..... Term expires 1917
MR. LEE HARRISON, *Secretary*, Topeka.

SECTION I.
General Information.

(5)

UNIVERSITY CALENDAR.

Academic Year, 1916-'17.

January 1, Monday—Close of Christmas recess.
January 22 to 26, Monday to Friday, inclusive—Semester examinations.
January 29, Monday—Beginning of second semester; enrollment in classes.
January 30, Tuesday—Beginning of class work in all departments.
February 22, Thursday, Washington's birthday—Legal holiday.
April 2, Monday—Beginning of second half-semester.
April 6 to 9, Friday to Monday—Easter recess.
May 28 to June 1, Monday to Friday, inclusive—Semester examinations.
May 30, Wednesday, Decoration Day—Legal holiday.
June 3, Sunday, 8 p. m.—Baccalaureate sermon.
June 5, Tuesday, 10:30 a. m.—Alumni address.
June 5, Tuesday, 8 p. m.—Chancellor's reception.
June 6, Wednesday, 10 a. m.—Commencement exercises.
June 7, Thursday—Beginning of Summer Session.
July 18, Wednesday—Close of first term.
July 19, Thursday—Opening of second term.
August 15, Wednesday—Close of second term.

Academic Year, 1917-'18.

September 17, 18, 19, Monday, Tuesday, Wednesday—Entrance examinations and registration.
September 18, 19, Tuesday, Wednesday—Enrollment in classes.
September 20—Beginning of class work in all departments.
September 21, Friday—General assembly and annual address, at 10 a. m.
October 12, Friday, Columbus Day—Legal holiday.
November 19, Monday—Beginning of second half-semester.
November 29 to December 1, Thursday to Saturday, inclusive—Thanksgiving recess, beginning Wednesday noon.
CHRISTMAS RECESS—Saturday, December 22, to Saturday, January 5, inclusive.
January 28 to February 1, Monday to Friday, inclusive—Semester examinations.
February 4, Monday—Beginning of second semester; enrollment in classes.
February 5, Tuesday—Beginning of class work in all departments.
February 12, Tuesday, Lincoln's birthday—Legal holiday.
February 22, Friday, Washington's birthday—Legal holiday.
March 29 to April 1, Friday to Monday, inclusive—Easter recess.
April 8, Monday—Beginning of second half-semester.
June 3 to 7, Monday to Friday, inclusive—Semester examinations.
May 30, Thursday, Decoration Day—Legal holiday.
June 9, Sunday, 8 p. m.—Baccalaureate sermon.
June 11, Tuesday, 10:30 a. m.—Alumni address.
June 11, Tuesday, 8 p. m.—Chancellor's reception.
June 12, Wednesday, 10 a. m.—Commencement exercises.
June 13, Thursday—Beginning of Summer Session.

CHRONOLOGICAL TABLE.

- 1855—(December). A university provided for in the first constitution of Kansas territory, at Topeka.
- 1857—(June). State University at Lawrence provided for by free-state legislature, Topeka.
- (September). Seminary of learning provided for in Lecompton constitution.
- 1858—(April). System of public instruction, including a university department, provided for in Leavenworth constitution.
- 1859—(July). State University provided for as at present, in Wyandotte constitution, now the constitution of the state of Kansas.
- 1861—Congress set apart and reserved for the use and support of a State University seventy-two sections of land.
- 1863—Lawrence selected as location for the University of Kansas.
- 1864—The University organized by the legislature.
- 1865—March 21, first meeting of the Board of Regents.
- 1866—July 19, Regents elected the first Faculty of the University, consisting of Elial Jay Rice, A. M., David Hamilton Robinson, A. M., and Francis Huntington Snow, A. M.
- North College erected.
- September 12, first session of the University opened at North College.
- 1870—Department of Engineering organized.
- 1872—Fraser Hall erected and occupied.
- 1876—Normal Department established.
- 1877—Department of Music organized.
- 1878—Department of Law organized.
- 1883—Medical Hall (old Chemistry Building) erected.
- 1885—Department of Pharmacy established.
- Normal Department discontinued.
- 1886—Snow Hall erected.
- 1891—The University reorganized; the Preparatory Department discontinued and the Schools of Arts, Engineering, Law, Fine Arts, and Pharmacy established.
- 1894—Spooner Library erected.
- Chancellor's residence erected.
- 1895—Blake Hall erected.
- 1896—The Graduate School established.
- 1899—The Fowler Shops erected.
- The School of Medicine established.
- 1900—Chemistry and Pharmacy Building erected.
- 1902—Dyche Museum of Natural History erected.
- 1903—Summer Session established.
- 1904—The name of the School of Arts changed to the College of Liberal Arts and Sciences.
- Green Hall erected.
- 1905—Full four-year course in medicine established.
- Eleanor Taylor Bell Memorial Hospital erected.
- 1906—Robinson Auditorium-Gymnasium erected.
- Clinical Laboratory erected.
- Nurses' Training School established.
- 1907—Marvin Hall erected.
- 1908—Haworth Hall erected.
- Power Plant and Laboratories erected.
- 1909—The School of Education established.
- The Division of University Extension established.
- 1911—First wing of Administration Building erected.
- State Hospital erected at Rosedale.
- Clay-working Laboratory erected.
- 1915—Dispensary at Rosedale erected.
- Oread Training School Building erected.
- 1916—Vivarium erected.

OFFICERS OF ADMINISTRATION.

THE UNIVERSITY.

FRANK STRONG, Ph. D., Chancellor.

Room 103, Fraser Hall.

Hours: 10 a. m. to 12 m. and 2 to 4 p. m.

WM. L. BURDICK, Ph. D., Vice President.

Room 206, Green Hall.

Hours: First semester, 11:30 a. m. to 12:30 p. m.; second semester, 9 to 10:30 a. m.

GEORGE O. FOSTER, A. B., Registrar.

Room 109, Fraser Hall.

Hours: 8 a. m. to 12 m. and 2 to 5 p. m.

JOHN M. SHEA, Superintendent of Buildings and Grounds.

Room 201, Repair Shop.

MRS. EUSTACE H. BROWN, Adviser of Women.

Room 114, Fraser Hall.

Hours: 9:30 to 11:30 a. m. and 2:30 to 4:30 p. m.

JOHN J. WHEELER, A. M., University Marshal.

Property Room, Robinson Gymnasium.

Hours: 10:30 to 12 m.

THE SCHOOLS.

FRANK W. BLACKMAR, Ph. D., Dean of the Graduate School.

Room 206, Administration Building.

Hours: 8 to 11 a. m.

OLIN TEMPLIN, A. M., Dean of the College of Liberal Arts and Sciences.

Room 102, Fraser Hall.

Hours: 9 to 12 a. m.

D. L. PATTERSON, B. S., Assistant Dean of the College of Liberal Arts and Sciences.

Room 106, Fraser Hall.

PERLEY F. WALKER, M. M. E., Dean of the School of Engineering.

Room 112, Marvin Hall.

Hours: 9 a. m. to 12 m.

JAMES W. GREEN, A. M., Dean of the School of Law.

Room 101, Green Hall.

Hours: 9 to 10 a. m.

HAROLD L. BUTLER, A. B., Dean of the School of Fine Arts.

North College.

Hours: 9 a. m. to 12 m. and 2 to 5 p. m.

CARL A. PREYER, MUS. D., Associate Dean of the School of Fine Arts.

North College.

Hours: _____

LUCIUS E. SAYRE, Ph. M., Dean of the School of Pharmacy.

Room 215, Chemistry and Pharmacy Building.

Hours: 10 to 11 a. m.

SAMUEL J. CRUMBINE, M. D., Dean of the School of Medicine.

Tuesdays at Lawrence.
Wednesdays at Rosedale.

MERVIN T. SUDLER, Ph. D., Associate Dean of the School of Medicine.

Tuesdays and Saturdays at Lawrence.
Mondays, Wednesdays, Thursdays and Fridays at Rosedale.

FREDERICK J. KELLY, Ph. D., Dean of the School of Education.

Room 119, Fraser Hall.
Hours: 11 a. m. to 12 m. and 3 to 4 p. m.

THE DIVISIONS.

FREDERICK J. KELLY, Ph. D., Director of Summer Session.

Room 119, Fraser Hall.
Hours: 11 a. m. to 12 m. and 3 to 4 p. m.

FREDERICK R. HAMILTON, Ph. D., Director of University Extension.

Room 117, Fraser Hall.
Hours: 8 a. m. to 12 m. and 2 to 5 p. m.

WILLIAM O. HAMILTON, A. B., Director of Athletics.

Room 203, Robinson Gymnasium.
Hours: 10 a. m. to 12 m.

———, Director of Libraries.

Room ———, Spooner Library.
Hours: ———

FRANK STRONG, Ph. D., *ex officio* Director of Museums.

Room 103, Fraser Hall.
Hours: 10 a. m. to 12 m. and 2 to 4 p. m.

ARTHUR T. WALKER, Ph. D., Director of University Publications.

Room 202.
Hours: 11:30 a. m.

———, Director of State Service Work.

Room ———
Hours: ———

———, Director of University Surveys.

Room ———
Hours: ———

OFFICERS OF INSTRUCTION.

FRANK STRONG, Chancellor of the University and President of the Faculties.

A. B. Yale, 1884; A. M. Yale, 1893; Ph. D. Yale, 1897; LL. D. Oregon, Baker, Kansas Agricultural College, 1909. Lecturer in History, Yale, 1897-99; President University of Oregon, 1899-1902. Present position, 1902.

WILLIAM LIVESEY BURDICK, Vice president of the University and Professor of Law.

A. B. Wesleyan, 1882; A. M. Wesleyan, 1885; Ph. D. Chattanooga, 1884; LL. B. Yale, 1898; Professor of Law, Kansas, 1898-1916. Present position, 1916.

PROFESSORS.

EPHRAIM MILLER, Emeritus Professor of Mathematics and Astronomy.

A. B. Allegheny, 1855; A. M. Allegheny, 1858; Ph. D. Allegheny, 1895. Professor of Mathematics and Astronomy, Kansas, 1874-1910.

JAMES WOODS GREEN, Dean of the School of Law and Professor of Law.

A. B. Williams, 1866; A. M. Williams, 1886. Present position, 1878.

EDGAR HENRY SUMMERFIELD BAILEY, Professor of Chemistry and Metallurgy and Director of Chemical Laboratories.

Ph. B. Yale, 1873; Ph. D. Illinois Wesleyan, 1883. Instructor in Chemistry, Yale, 1873-74; Instructor in Chemistry, Lehigh, 1874-83. Present position, 1883.

ALEXANDER MARTIN WILCOX, Professor of Greek Language and Literature.

A. B. Yale, 1877; Ph. D. Yale, 1880. Assistant in Greek, Wesleyan, 1880-83. Present position, 1885.

LUCIUS ELMER SAYRE, Dean of the School of Pharmacy, Professor of Pharmacy and Materia Medica.

Ph. G. Philadelphia College of Pharmacy, 1866; Ph. M. Philadelphia College of Pharmacy, 1896; B. S. Michigan, 1897. Instructor, Philadelphia College of Pharmacy, 1880-85. Present position, 1885.

FRANK WILSON BLACKMAR, Dean of the Graduate School and Professor of Sociology.

Ph. B. University of the Pacific, 1881; A. M. University of the Pacific, 1884; Ph. D. Johns Hopkins, 1889. Professor of Mathematics, University of the Pacific, 1882; Professor of History and Sociology, Kansas, 1889-99; Dean of the Graduate School, 1897—; Professor of Sociology and Economics, Kansas, 1899-1911; Professor of Sociology, Kansas, 1911.

CHARLES GRAHAM DUNLAP, Professor of English Literature.

A. B. Ohio Wesleyan, 1883; A. M. Ohio Wesleyan, 1899; Litt. D. Princeton, 1892. Assistant Professor of English Literature, Kansas, 1887; Associate Professor of English Literature, Kansas, 1889. Present position, 1890.

CARL ADOLPH PREYER, Associate Dean of the School of Fine Arts and Professor of Piano and Composition.

Mus. D. Baker, 1909; Professor of Piano, Counterpoint, Canon and Fugue, Kansas, 1892-1915. Present position, 1915.

OLIN TEMPLIN, Dean of the College of Liberal Arts and Sciences, and Professor of Philosophy.

A. B. Kansas, 1886; A. M. Kansas, 1890. Instructor in Mathematics, Kansas, 1884; Assistant Professor of Mathematics, Kansas, 1886; Associate Professor of Philosophy, Kansas, 1890; Professor of Philosophy, Kansas, 1892. Present position, 1903.

EDWIN MORTIMER HOPKINS, Professor of Rhetoric and English Language.

A. B. Princeton, 1888; A. M. Princeton, 1890; Ph. D. Princeton, 1894. Assistant Professor of English, Kansas, 1889; Associate Professor of English, Kansas, 1892. Present position, 1893.

FRANK HEYWOOD HODDER, Professor of American History and Political Science.

Ph. M. Michigan, 1883. Instructor in History and Economics, Cornell, 1885-89; Assistant Professor of Economics, 1889-90; Associate Professor of American History, 1891-93. Present position, 1893.

ERASMUS HAWORTH, Professor of Geology and Mineralogy.

B. S. Kansas, 1881; M. S. Kansas, 1884; Ph. D. Johns Hopkins, 1888. Associate Professor of Geology, Kansas, 1892. Present position, 1894.

ARTHUR TAPPAN WALKER, Professor of Latin Language and Literature, and Director of University Publications.

A. B. New York, 1887; A. M. Vanderbilt, 1892; Ph. D. Chicago, 1898. Professor of Latin and Greek, Juniata, 1888-90; Professor of Latin and Greek, Emory and Henry, 1892-93; Instructor in Latin, Chicago, 1894-97. Present position, 1897.

WILLIAM CHASE STEVENS, Professor of Botany.

B. S. Kansas, 1885; M. S. Kansas, 1893. Assistant in Botany, 1889-92; Associate Professor of Botany, 1892-99. Present position, 1899.

ARVIN SOLOMON OLIN, Professor of Education.

A. B. Ottawa, 1892; A. M. Kansas, 1894; LL. D. Ottawa, 1915. Instructor in Pedagogy, Kansas, 1893; Associate Professor of Pedagogy, Kansas, 1894; Professor of Education, Kansas, 1899; Dean of the Summer Session, Kansas, 1913-15; Acting Dean of the School of Education, Kansas, 1913-14; Dean of the School of Education, Kansas, 1914-15. Present position, 1899.

WILLIAM ALEXANDER GRIFFITH, Professor of Drawing and Painting.

Academie Julien. Professor of Drawing and Painting, Washburn, 1893-94; Instructor in Drawing, Washington, 1895-97. Present position, 1899.

EUGENE GALLOO, Professor of Romance Languages and Literatures.

Academie de Paris, Brevet, 1881, Sorbonne, 1884; B. L. Michigan, 1892; A. M. Kansas, 1895. Assistant Professor in French, 1892; Associate Professor in French and Spanish, 1899-1900. Present position, 1900.

CHARLES SANFORD SKILTON, Professor of Organ, Theory of Music and Music History.

A. B. Yale, 1889; Dean of the School of Fine Arts, 1903-15. Present position, 1903.

IDA HENRIETTA HYDE, Professor of Physiology.

A. B. Cornell, 1891; Ph. D. Heidelberg, 1896. Associate Professor of Physiology, Kansas, 1899. Present position, 1905.

WILLIAM HAMILTON JOHNSON, Professor of Education.

A. B. Kansas, 1885; A. M. Kansas, 1891. Professor of History and Pedagogy, Emporia State Normal, 1893-96. Present position, 1903.

JAMES NAISMITH, Professor of Physical Education.

A. B. McGill, 1887; M. D. Gross Medical, 1898; M. P. E. Springfield Y. M. C. A. College, 1910. Instructor, Springfield Y. M. C. A. College, 1891; Associate Professor of Physical Education, Kansas, 1898. Present position, 1908.

SAMUEL JOHN HUNTER, Professor of Entomology.

A. B. Kansas, 1893; A. M. Kansas, 1893. Assistant Professor of Entomology, Kansas, 1896; Associate Professor of Entomology, Kansas, 1899. Present position, 1906.

WILLIAM EDWARD HIGGINS,¹ Professor of Law.

B. S. Kansas, 1888; LL. B. Kansas, 1894. Assistant Professor of Law, 1894; Associate Professor of Law, 1900. Present position, 1906.

PERLEY F. WALKER, Dean of the School of Engineering and Professor of Mechanical Engineering.

B. M. E. Maine, 1896; M. E. Maine, 1900; M. M. E. Cornell, 1901. Instructor in Mechanical Engineering, Maine, 1896-1900; Professor of Mechanical Engineering, Maine, 1902-05; Professor of Mechanical Engineering, Kansas, 1905-13. Present position, 1913.

MERVIN TUBMAN SUDLER, Associate Dean of the School of Medicine, and Professor of Surgery.

B. S. Maryland Agricultural, 1894; M. S. 1897; Ph. D. Johns Hopkins, 1899; M. D. College of Physicians and Surgeons, Baltimore, 1901. Instructor in Anatomy, Johns Hopkins, 1900-02; Instructor in Anatomy and Surgery, Cornell, 1902-03; Dean of the Scientific Department, School of Medicine, Kansas, 1905-11. Present position, 1911.

L. D. HAVENHILL, Professor of Pharmacy.

Ph. C. Michigan, 1893; Ph. M. Michigan, 1894; B. S. Kansas, 1903. Assistant Professor of Pharmacy, 1899-1906; Associate Professor of Pharmacy, 1906-08. Present position, 1908.

FREDERICK EDWARD KESTER, Professor of Physics.

M. E. Ohio, 1895; A. M. Cornell, 1899; Ph. D. Cornell, 1905. Assistant in Physics, Ohio, 1895-98; Instructor in Physics, Ohio, 1899-1901; Assistant Professor of Physics, Ohio, 1901-03, 1905-07; Associate Professor of Physics, Ohio, 1907-09. Present position, 1909.

GEORGE CARL SHAAD, Professor of Electrical Engineering.

B. S. Pennsylvania, 1900; E. E. Pennsylvania, 1905. Instructor in Electrical Engineering, Wisconsin, 1902-04; Assistant Professor of Electrical Engineering, Wisconsin, 1904-06; Assistant Professor of Electrical Engineering, Massachusetts Institute of Technology, 1906-07; Associate Professor of Electrical Engineering, Massachusetts Institute of Technology, 1907-09. Present position, 1909.

SAMUEL JAY CRUMBINE, Dean of the School of Medicine, and Professor of Preventive Medicine.

M. D. Cincinnati, 1889. Present position, 1905.

HAMILTON PERKINS CADY, Professor of Chemistry.

A. B. Kansas, 1897; Ph. D. Kansas, 1903. Assistant Professor of Chemistry, 1889-95; Associate Professor of Chemistry, 1895-1911. Present position, 1911.

DON CARLOS GUFFEY, Professor of Obstetrics and Gynecology.

B. S. Missouri, 1899; M. S. Kansas, 1908; M. D. Pennsylvania, 1905. Present position, 1914.

MERLE THORPE,* Professor of Journalism, and Director of University Press and Publicity.

A. B. Washington, 1908. Instructor in Journalism, Washington, 1907-09. Assistant Professor of Journalism, Washington, 1909-11. Present position, 1911.

JOHN SUNDWALL, Professor of Anatomy.

B. S. Chicago, 1903; Ph. D. Chicago, 1906; M. D. Johns Hopkins, 1912. Assistant in Anatomy, Chicago, 1906-07; Professor of Anatomy, Utah, 1907-10. Present position, 1912.

LINDSEY STEPHEN MILNE, Professor of Medicine.

M. B., Ch. B., M. D. Edinburgh, 1908. Present position, 1912.

FREDERICK HORATIO BILLINGS, Professor of Bacteriology.

A. B. Leland Stanford, 1896; A. M. Harvard, 1897; Ph. D. Munich, 1901. Professor of Botany and Bacteriology, Louisiana, 1901-07; Associate Professor of Botany and Bacteriology, Kansas, 1907-13. Present position, 1913.

1. On leave of absence.

* Absent on leave.

HERBERT ALLAN RICE, Professor of Mechanics and Structural Engineering.

C. E. Ohio, 1897. Instructor in Civil Engineering, Lehigh, 1902-05; Assistant Professor of Civil Engineering, Kansas, 1905-06; Associate Professor of Civil Engineering 1906-13. Present position, 1913.

BENNET MILLS ALLEN, Professor of Zoölogy.

Ph. B. De Pauw, 1898; Ph. D. Chicago, 1903. Instructor in Zoölogy, Wisconsin, 1903-08; Assistant Professor of Zoölogy, Wisconsin, 1908-13. Present position, 1913.

EDMUND HOWARD HOLLANDS, Professor of Philosophy.

Ph. B. Cornell, 1899; A. M. Cornell, 1901; Ph. D. Cornell, 1905. Instructor in Philosophy, Cornell, 1905-06; Instructor in Philosophy, Princeton, 1906-07; Instructor in Philosophy, Cornell, 1907-09; Assistant Professor of Philosophy, Hamilton, 1909-10; Professor of Philosophy, Butler, 1910-13. Present position, 1913.

HENRY WILBUR HUMBLE, Professor of Law.

A. M. Cornell, 1908; LL. B. Cincinnati, 1904; J. D. Chicago, 1915. Assistant in Economics, Cornell, 1907-08; Associate Professor of Law, Kansas, 1908-13. Present position, 1913.

EDWARD DELAHAY OSBORN, Professor of Law.

Present position, 1913.

SAMUEL ALEXANDER MATTHEWS, Professor of Physiology and Experimental Pharmacology.

M. D. Michigan, 1898. Assistant Professor of Experimental Therapeutics, Chicago, 1905-13. Present position, 1913.

GOLDWIN GOLDSMITH, Professor of Architecture.

Ph. B. Columbia, 1896. Present position, 1913.

WILLIAM ARCH MCKEEVER, Head of Department of Child Welfare.

A. M. Kansas, 1898; Ph. M. Chicago, 1904. Professor of Philosophy, Kansas State Agricultural College, 1900-13. Present position, 1913.

FRANK BURNETT DAINS, Professor of Chemistry.

Ph. B. Connecticut Wesleyan, 1890; M. S. Wesleyan, 1891; Ph. D. Chicago, 1898. Assistant Professor of Chemistry, Northwestern, 1895-1901; Professor of Chemistry, Washburn, 1902-11; Associate Professor of Chemistry, Kansas, 1911-14. Present position, 1914.

CLEMENT CLARENCE WILLIAMS, Professor of Railway Engineering.

B. S. Southern Iowa Normal, 1900; B. S. in C. E. Illinois, 1907; C. E. Colorado, 1909. Instructor, Southern Iowa Normal, 1900-02; Instructor in Civil Engineering, Colorado, 1907-09; Assistant Professor of Civil Engineering, Colorado, 1909-14. Present position, 1914.

ELMER FRANKLIN ENGLE, Professor of German.

A. B. Kansas, 1892; A. M. Harvard, 1898. Assistant in German, Kansas, 1892; Assistant Professor of German, Kansas, 1896-1905; Associate Professor of German, Kansas, 1905. Present position, 1914.

JOHN NICHOLAS VAN DER VRIES, Professor of Mathematics.

A. B. Hope, 1896; A. M. Hope, 1899; Ph. D. Clark, 1901. Assistant Professor of Mathematics, Kansas, 1901-06; Associate Professor of Mathematics, Kansas, 1906-14. Present position, 1914.

WILLIAM OLIVER HAMILTON, Professor of Physical Education and Director of Athletics.

A. B. William Jewell, 1908. Physical Director, William Jewell, 1896; Assistant Professor of Physical Education, Kansas, 1912. Present position, 1914.

ARTHUR MACMURRAY, Professor of Public Speaking.

A. B. Kansas, 1896; M. O. Ott School of Expression, 1904. Professor of Public Speaking, Iowa State College, 1908-14. Present position, 1914.

FREDRICK RUTHERFORD HAMILTON, Director University Extension Division.

Ph. D. Wisconsin, 1906. Present position, 1914.

ELIZABETH CADE SPRAGUE, Professor of Home Economics.

Graduate, Boston Normal School of Household Arts, 1893. Instructor in Home Economics, Lake Erie, 1900-01; Research Assistant, Illinois, 1901-05; Instructor in Home Economics, Chicago, 1905-13. Present position, 1914.

RALPH HERMAN MAJOR, Professor of Bacteriology and Pathology.

A. B. William Jewell, 1902; M. D. Johns Hopkins, 1910. Assistant in Medicine, 1910-12; Instructor in Pathology, Stanford, 1912-14. Present position, 1914.

WILLIAM BELL DOWNING, Professor of Voice and Public School Music.

Graduate, Drake, 1905; Professor of Voice, Highland Park, 1907-09; Instructor in Voice, Drake, 1909-13. Present position, 1914.

HERMAN OLCOTT, Professor of Physical Education.

A. B. Yale, 1901. Present position, 1915.

RAPHAEL DORMAN O'LEARY, Professor of English.

A. B. Kansas, 1893; A. B. Harvard, 1895. Assistant Professor of English, Kansas, 1895-1906; Associate Professor of Rhetoric, 1906-15. Present position, 1915.

RAYMOND ALFRED SCHWEGLER, Professor of Education.

A. B. Brown, 1899; A. M. Ottawa, 1907; Associate Professor of Education, Kansas, 1907-15. Present position, 1915.

ARTHUR JEROME BOYNTON, Professor of Economics.

A. B. Harvard, 1901; A. M. Columbia, 1902. Assistant Professor of Economics, 1903-10; Associate Professor of Economics, Kansas, 1910-15. Present position, 1915.

CHARLES HAMILTON ASHTON, Professor of Mathematics.

A. B. Union, 1887; A. M. Harvard, 1893; Ph. D. Munich, 1909. Instructor in Mathematics, Harvard, 1894-1903; Assistant Professor of Mathematics, Kansas, 1903-10; Associate Professor of Mathematics, 1910-15. Present position, 1915.

WORT S. MORSE, Professor of Violin.

B. S. Central Wesleyan, 1898. Instructor in Violin, Kansas, 1909-15. Present position, 1915.

ARTHUR CLARK TERRILL, Professor of Mining and Ore Dressing.

E. M. Colorado School of Mines, 1905; A. M. Columbia, 1914. Assistant Professor of Mining, Metallurgy and Geology, University of Oregon, 1906-07; Professor of Mining and Metallurgy, Oregon, 1907-08; Head of Mining Department and Professor of Metallurgy, University of Idaho, 1908-09; Assistant in Mine Surveying, Columbia University, Summer of 1914. Present position, 1915.

HAROLD LANCASTER BUTLER, Dean of the School of Fine Arts and Professor of Voice.

A. B. Valparaiso, 1894; Graduate, School of Music, Valparaiso, 1895; LL. B. Valparaiso, 1896; Graduate, Gottschalk Lyric School, Chicago, 1898; Instructor in Voice, Valparaiso, 1896-98; Director, School of Music, Valparaiso, 1890-1904; Director Vocal Department, College of Fine Arts, Syracuse, 1904-15. Present position, 1915.

ARTHUR NEVIN, Professor of Ensemble and Music Extension.

Conductor of Chorus Work, McDowell Memorial Association. Present position, 1915.

HARRY CONRAD THURNAU, Professor of Germanic Languages and Literatures.

A. B. Michigan, 1899; A. M. Michigan, 1903; Ph. D. Michigan, 1909. Instructor in German, University of Michigan, 1905-12; Associate Professor of German, Oberlin College, 1912-15. Present position, 1915.

FREDERICK JAMES KELLY, Dean of the School of Education, Director of the Summer Session and Professor of Education.

A. B. Nebraska, 1902; Ph. D. Columbia, 1914. Director of the Training School, State Normal, Spearfish, S. Dak., 1903-12; Director of the Training School, State Normal, Emporia, Kan., 1914-15. Present position, 1915.

DAVID LESLIE PATTERSON, Professor of European History and Assistant Dean of the College of Liberal Arts and Sciences.

B. S. Pennsylvania State, 1895. Instructor in History, Wisconsin, 1905-08; Associate Professor of History, Kansas, 1908-16; Acting Associate Professor of History, Wisconsin, 1914-15. Present position, 1916.

WILLIAM ASBURY WHITAKER, Professor of Metallurgy and Director of State Chemical Research.

Ph. B. North Carolina, 1904; A. M. Columbia, 1905. Assistant in Chemistry, North Carolina, 1908-04; Instructor in Chemistry, city of New York, 1906-11; Associate Professor of Metallurgy, 1911-16. Present position, 1916.

LEON NELSON FLINT, Professor of Journalism.

A. B. Kansas, 1897; Lecturer in Journalism, Kansas, 1906-09; Assistant Professor of Journalism, 1909-13; Associate Professor of Journalism, 1913-16. Present position, 1916.

FREDERICK HUBBARD SIBLEY, Professor of Mechanical Engineering and Director of Fowler Shops.

Ph. B. Brown, 1898; M. E. Case, 1904; Assistant Professor of Mechanical Engineering, Case, 1907; Professor of Mechanical Engineering, Alabama, 1912; Assistant Professor of Mechanical Engineering, Kansas, 1912-13; Associate Professor of Mechanical Engineering, 1913-16. Present position, 1916.

GEORGE ELLETT COGHILL, Professor of Anatomy.

A. B. Brown, 1896; M. S. New Mexico, 1899; Ph. D. Brown, 1902; Assistant Professor of Biology, Willamette, 1906-07; Professor of Zoölogy, Denison, 1907-13; Associate Professor of Biology, Willamette, 1906-07; Professor of Zoölogy, Denison, 1907-13; Associate Professor of Anatomy, Kansas, 1913-16. Present position, 1916.

RAYMOND ASA KENT, Professor of Education.

A. B. Cornell College, 1903; A. M. Columbia, 1910; Instructor in Mathematics, State Normal School, Winona, Minn., 1909-11; Principal University High School and Assistant Professor of Education, Minnesota, 1914-16. Present position, 1916.

OLE OLUFSON STOLAND, Professor of Physiology.

A. B. South Dakota, 1905; M. S. Chicago, 1911; Ph. D. Chicago, 1913; Instructor in Biology, South Dakota, 1906-11; Assistant in Physiology, Chicago, 1911-13; Professor of Physiology, South Dakota, 1913-16. Present position, 1916.

WALTER SAMUEL HUNTER, Professor of Psychology.

A. B. Texas, 1910; Ph. D. Chicago, 1912. Instructor in Philosophy, Texas, 1912-14; Adjunct Professor of Psychology, Texas, 1914-16. Present position, 1916.

WILLIAM MATHEWS HEKKING, Professor of Drawing and Painting.

B. P. Syracuse, 1908; Art Students' League, New York; Academie Julien; Academie Colorossi; Instructor in Drawing, Syracuse, 1911-12; Director, School of Fine and Applied Arts, James Millikin, 1912-15; Associate in Drawing, Department of Architecture, Illinois, 1915-16. Present position, 1916.

JACOB BLOCK, Professor of Genito-urinary Surgery.

M. D. Medical College of Ohio, 1879. Present position, 1905.

JOHN WALTER PERKINS, Professor of Surgery.

A. B. Harvard, 1882; M. D. Harvard, 1886. Present position, 1905.

S. S. GLASSCOCK, Professor of Psychiatry.

M. D. Rush, 1887. Present position, 1905.

JOSEPH S. SAWTELL, Professor of Otorhinolaryngology.

M. D. College of Physicians and Surgeons, Baltimore, 1886. Present position, 1905.

ISADORE JULIUS WOLF, Professor of Internal Medicine.

M. D. Munich, 1887. Present position, 1905.

FRANKLIN E. MURPHY, Professor of Clinical Medicine.

M. D. Pennsylvania, 1893. Present position, 1907.

LYMAN L. UHLS, Professor of Psychiatry.

M. D. Rush, 1884. Present position, 1911.

ZACHARIAH NASON, Professor of Clinical Obstetrics.

M. D. College of Physicians and Surgeons, Baltimore, 1888. Present position, 1912.

EDWARD JAMES CURRAN, Professor of Ophthalmology.

M. D. Harvard, 1908; D. Ophth. Oxon, 1910. Present position, 1913.

PETER THOMAS BOHAN, Professor of Clinical Medicine.

M. D. Rush, 1900. Instructor in Internal Medicine, 1905. Present position, 1914.

GEORGE M. GRAY, Professor of Clinical Surgery.

M. D. Kansas City Medical, 1879; M. D. Bellvue, 1880. Present position, 1914.

WILLIAM L. MCBRIDE, Professor of Dermatology.

M. D. Rush, 1901. Associate Professor of Dermatology, 1905-16. Present position, 1916.

RICHARD L. SUTTON, Professor of Dermatology.

M. D. University Medical College, 1901; M. D. George Washington, 1904. Associate Professor of Dermatology, 1911-16. Present position, 1916.

ASSOCIATE PROFESSORS.

MILES WILSON STERLING, Associate Professor of Greek.

A. B. Kansas, 1883; A. M. Kansas, 1893. Assistant in Latin and Greek, Kansas, 1883-85; Assistant in Greek, 1885; Assistant Professor of Greek, Kansas, 1896-1901. Present position, 1901.

HANNAH OLIVER, Associate Professor of Latin.

A. B. Kansas, 1874; A. M. Kansas, 1888. Assistant Professor of Latin, 1890-1905. Present position, 1905.

SELDEN LINCOLN WHITCOMB, Associate Professor of English Literature.

A. B. Grinnell, 1887; A. M. Columbia, 1893. Professor of English Literature, Grinnell, 1895-1905. Present position, 1905.

MARTIN EVERETT RICE, Associate Professor of Physics and Electrical Engineering.

B. S. Kansas, 1891; M. S. Kansas, 1893. Instructor in Physics, Kansas, 1892-95; Assistant Professor of Physics, Kansas, 1895-1901. Present position, 1906.

CLARENCE ADDISON DYKSTRA, Associate Professor of History.

A. B. Iowa, 1903. Instructor in History and Political Science, Ohio State, 1908-09. Present position, 1909.

LOUIS EUGENE SISSON, Associate Professor of Rhetoric.

A. B. Leland Stanford, 1904; A. M. Harvard, 1909. Instructor in Rhetoric, 1904-05; Assistant Professor of Rhetoric, 1905-10. Present position, 1910.

ALBERTA LINTON CORBIN, * Associate Professor of German.

A. B. Kansas, 1893; Ph. D. Yale, 1902. Assistant Professor of German, Kansas, 1902-11. Present position, 1911.

GEORGE JUSSEN HOOD, Associate Professor of Mechanical Drawing.

B. S. Kansas, 1902. Assistant Professor of Mechanical Drawing, Kansas, 1902-11. Present position, 1911.

WILLIAM JACOB BAUMGARTNER, Associate Professor of Zoölogy.

A. B. Kansas, 1900; A. M. Kansas, 1901. Instructor in Zoölogy, Kansas, 1904-05; Assistant Professor of Zoölogy, Kansas, 1905-13. Present position, 1913.

* Absent on leave, second semester.

HENRY OTTO KRUSE, Associate Professor of German.

A. B. Kansas, 1894; A. M. Kansas, 1903. Instructor in German, Kansas, 1904-05; Assistant Professor of German, 1905-13. Present position, 1913.

CLARENCE CORY CRAWFORD, Associate Professor of European History.

A. B. Kansas, 1903; A. M. Kansas, 1904; Ph. D. Wisconsin, 1906. Assistant in History, Wisconsin, 1904-06; Instructor in History, Missouri, 1906-07; Assistant Professor of European History, Kansas, 1907-13. Present position, 1913.

EARLE WALTER MURRAY, Associate Professor of Latin.

A. B. Kansas, 1904. Assistant Professor of Latin, Kansas, 1907-13. Present position, 1913.

WILLIAM SAVAGE JOHNSON, Associate Professor of English Literature.

A. B. Yale, 1900; Ph. D. Yale, 1905. Instructor, Yale, 1905-08; Assistant Professor of English Literature, Kansas, 1908-13. Present position, 1913.

VICTOR EMANUAL HELLEBERG, Associate Professor of Sociology.

A. B. Yale, 1883; LL. B. Cincinnati, 1885. Instructor in Sociology, Chicago, 1908-10; Assistant Professor of Sociology, Kansas, 1910-13. Present position, 1913.

CHARLES ARTHUR HASKINS, Associate Professor of Sanitary Engineering.

B. S. Kansas, 1910. Instructor of Civil Engineering, Kansas, 1911; Assistant Professor of Civil Engineering, Kansas, 1912. Present position, 1913.

FLORENCE MARLEY BROWN, Adviser of Women.

Present position, 1914.

GEORGE OTIS FOSTER, Registrar.

A. B. Kansas, 1901. Present position, 1899.

FREDERIC NEWTON RAYMOND, Associate Professor of Rhetoric.

A. B. Kansas, 1896; A. M. Columbia, 1897. Assistant Professor of Rhetoric, Kansas, 1901-14. Present position, 1914.

MARGARET LYNN,² Associate Professor of English Literature.

B. S. Tarkio, 1899; A. M. Nebraska, 1900. Assistant Professor of English Literature, Kansas, 1901-14. Present position, 1914.

ELISE NEUEN SCHWANDER, Associate Professor of Romance Languages.

A. B. Kansas, 1898; Ph. D. Yale, 1913. Assistant Professor of Romance Languages, 1905-14. Present position, 1914.

ARTHUR LESLIE OWEN, Associate Professor of Romance Languages.

A. B. Vermont, 1906; A. M. Illinois, 1909. Assistant Professor of Romance Languages, Kansas, 1910; Instructor in Romance Languages, Chicago, 1913. Present position, 1914.

HERMAN CAMP ALLEN, Associate Professor of Chemistry.

A. B. McPherson, 1904; A. M. Kansas, 1905; Ph. D. Cornell, 1912. Assistant Professor of Chemistry, 1910-14. Present position, 1914.

WILLIAM WATSON DAVIS, Associate Professor of American History.

B. S. Alabama Polytechnic Institute, 1903; M. S. Alabama Polytechnic Institute, 1904; A. M. Columbia, 1906; Ph. D. Columbia, 1913. Lecturer in History, Columbia, 1908-09; Assistant Professor of American History, Kansas, 1910-14. Present position, 1914.

CARL FERDINAND NELSON,³ Associate Professor of Physiological Chemistry.

A. B. Wisconsin, 1908; A. M. Wisconsin, 1910; Ph. D. Wisconsin, 1912. Instructor in Chemistry, Iowa, 1908-11; Instructor in Chemistry, Illinois, 1912. Present position, 1913.

2. Absent on leave.

3. Absent on leave.

WILLIAM COLEMAN MCNOWN, Associate Professor of Civil Engineering.

B. S. Wisconsin, 1903. Instructor in Civil Engineering, Cornell, 1905-07; Professor of Civil Engineering, Earlham, 1907-09; Assistant Professor of Civil Engineering, Kansas, 1913-14. Present position, 1914.

ALICE LITTLEJOHN GOETZ,⁴ Associate Professor of Physical Education.

Graduate, Sargent Normal School, 1902; Graduate, Harvard Summer School of Physical Education, 1905; M. D. Howard University Medical, 1906. Associate Professor of Physical Education, Ohio, 1907-14. Present position, 1914.

CHARLES ALBERT SHULL, Associate Professor of Plant Physiology and Genetics.

B. S. Chicago, 1905; Ph. D. Chicago, 1915. Assistant Professor of Biology, Transylvania, 1906-08; Professor of Biology, Transylvania, 1908-12; Assistant Professor of Botany, Kansas, 1912-15. Present position, 1915.

ULYSSES GRANT MITCHELL, Associate Professor of Mathematics.

A. B. Kansas, 1906; A. M. Kansas, 1907; Ph. D. Princeton, 1910. Instructor in Mathematics, Kansas, 1906-08; Assistant Professor of Mathematics, Kansas, 1910-15. Present position, 1915.

ALFRED HIGGINS SLUSS, Associate Professor of Mechanical Engineering.

B. S. in Mech. Eng. Illinois, 1901. Assistant Professor of Mechanical Engineering, 1908-15. Present position, 1915.

JOSEPH AUGUSTUS FARRELL, Associate Professor of Voice.

Graduate Royal Conservatory, Leipsic; Professor of Violin, Kansas, 1893-96; Professor of Voice and Violin, Kansas, 1896-1900; Instructor in Voice, Kansas, 1913-15. Present position, 1915.

GEORGE ELLSWORTH PUTNAM, Associate Professor of Economics.

A. B. Kansas, 1907; A. M. Yale, 1908; B. Litt. Oxon, 1911. Assistant Professor of Economics, Kansas, 1911-16. Present position, 1916.

FLOYD CARLTON DOCKERAY, Associate Professor of Psychology.

A. B. Michigan, 1907; A. M. Michigan, 1909; Ph. D. Michigan, 1915. Assistant Instructor in Psychology, Michigan, 1908-09; Instructor in Psychology, Kansas, 1910-13; Assistant Professor, 1913-16. Present position, 1916.

HUBERT WILBUR NUTT, Associate Professor of Education, and Principal of Oread Training School.

Ph. B. Chicago, 1914; Dean of Education, Marion Normal, 1909-12; Dean of Education, Muncie Normal, 1912-14; Assistant Professor of Education, Kansas, 1914-16. Present position, 1916.

JOSEPH GRANGER BRANDT, Associate Professor of Greek.

Ph. B. Lawrence College, 1913; Ph. D. Wisconsin, 1911. Instructor in Latin, Wisconsin, 1908-11; Carnegie Research Associate, American School of Classical Studies in Rome, 1911-12; Instructor in Latin, Wisconsin, 1912-13; Assistant Professor of Latin, Wisconsin, 1913-14; Assistant Professor of Latin and Greek, Wisconsin, 1914-15; Assistant Professor of Greek, Kansas, 1915-16. Present position, 1916.

RAYMOND FRIDMAN RICE, Associate Professor of Law.

A. B. Oberlin, 1905; LL. B. Kansas, 1908. Associate Professor of Law, Kansas, 1913-15. Present position, 1916.

NOBLE PIERCE SHERWOOD, Associate Professor of Bacteriology.

B. S. Kansas, 1905; A. M. Kansas, 1911. Instructor in Bacteriology, Kansas, 1910-13; Assistant Professor of Bacteriology, 1913-16. Present position, 1916.

DOROTHY CHILD, Associate Professor of Physical Education.

A. B. Bryn Mawr, 1910; M. D. Johns Hopkins, 1914; Dr. P. H. University of Pennsylvania, 1916. Present position, 1916.

ARTHUR E. HERTZLER, Associate Professor of Surgery.

M. D. Northwestern, 1894; Ph. D. Illinois Wesleyan, 1902. Present position, 1905.

4. Absent on leave.

WILLIAM FREDERICK KUHN, Associate Professor of Psychiatry.

A. M. Wittenberg, 1878; M. D. Jefferson Medical, 1885. Present position, 1905.

WILLIAM KIRK TRIMBLE, Associate Professor of Clinical Pathology.

M. D. Kansas City Medical, 1900. Present position, 1905.

JOHN N. SCOTT, Associate Professor of Electrotherapeutics.

Ph. G. Kansas, 1887; M. D. University Medical, 1896. Present position, 1907.

WALTER S. SUTTON,⁵ Associate Professor of Surgery.

A. B. Kansas, 1900; A. M. Kansas, 1901; M. D. Columbia, 1907. Present position, 1909.

ANDREW L. SKOOG, Associate Professor of Neurology.

M. D. Northwestern, 1902. Present position, 1911.

CHARLES CLINTON CONOVER, Associate Professor of Clinical Medicine.

B. S. Missouri, 1896; M. D. University Medical, 1901. Present position, 1913.

WILLIAM J. V. DEACON, Associate Professor of Preventive Medicine.

Present position, 1914.

ORVAL JAMES CUNNINGHAM, Associate Professor of Surgery.

M. D. Rush, 1904. Present position, 1915.

ASSISTANT PROFESSORS.

CHARLES MORGAN STERLING, Assistant Professor of Pharmacognosy.

A. B. Kansas, 1897. Present position, 1901.

EDWIN FISKE STIMPSON, Assistant Professor of Physics.

B. S. Kansas, 1890. Instructor in Physics, 1901-05. Present position, 1905.

CHARLES COCHRAN, Assistant Professor of Mechanical Drawing.

B. S. in M. E. Colorado, 1906. Present position, 1906.

FRANK EVERETT JONES, Superintendent of Fowler Shops and Assistant Professor of Pattern Making and Founding.

Instructor in Carpentry and Pattern Making, 1903-06; Assistant Professor of Pattern Making and Foundry, 1906-15. Present position, 1915.

JAMES EDWARD TODD, Assistant Professor of Geology and Mineralogy.

A. B. Oberlin, 1867; M. A. Oberlin, 1870. Professor of Natural Sciences, Tabor, 1871-92; Adjunct Professor of Natural Sciences, Beloit, 1881-83; Professor of Geology and Mineralogy, South Dakota, 1892-1903. Present position, 1907.

HARRIETT GREISSINGER, Assistant Professor of Piano.

Mus B. Kansas, 1895. Instructor in Piano, 1902-07. Present position, 1907.

EDWARD MAURICE BRIGGS,* Assistant Professor of German.

A. B. Nebraska, 1904; A. M. Kansas, 1908. Instructor in German, 1906-10. Present position, 1910.

ALBERT MOREY STURTEVANT, Assistant Professor of German.

A. B. Harvard, 1899; A. M. Harvard, 1901; Ph. D. Harvard, 1905. Instructor in German, 1908-10. Present position, 1910.

GEORGE NATHANIEL WATSON, Assistant Professor of Pharmacy, in charge of Drug Laboratory.

A. B. Michigan, 1904; B. S. Michigan, 1908; Ph. C. Michigan, 1908. Instructor in Pharmacy, 1909-10. Present position, 1910.

5. Died November 10, 1916.

* Absent on leave.

LULU GARDNER, Assistant Professor of Rhetoric.

A. B. Kansas, 1905. Instructor in Rhetoric, Kansas, 1905-09. Present position, 1910.

CALVERT JOHNSON WINTER,⁶ Assistant Professor of Romance Languages.

Ph. B. Hirman, 1905. Instructor in Romance Languages, 1909-11. Present position, 1911.

CLIFFORD CAUDY YOUNG, Assistant Professor of Chemistry, and Director of State Water and Sewage Laboratory.

A. B. Kansas, 1910. Present position, 1910.

ARTHUR MITCHELL, Assistant Professor of Philosophy.

A. B. Yale, 1894; Ph. D. Harvard, 1910. Present position, 1911.

FREDERICK A. G. COWPER, Assistant Professor of Romance Languages.

A. B. Trinity, 1906; A. M. Trinity, 1911. Professor of Romance Languages, Drury, 1908-11. Present position, 1911.

HERBERT E. JORDAN, Assistant Professor of Mathematics.

A. B. McMaster, 1900; A. M. McMaster, 1901; Ph. D. Chicago, 1904. Instructor in Mathematics, Brandon College, 1904-06; Instructor in Mathematics and Physics, Michigan College of Mines, 1906-11. Present position, 1911.

WILLIAM REES B. ROBERTSON, Assistant Professor of Zoölogy.

A. B. Kansas, 1906; A. M. Kansas, 1907; Ph. D. Harvard, 1915. Instructor in Zoölogy, Kansas, 1907-09. Present position, 1912.

THEODORE TOWNSEND SMITH, Assistant Professor of Physics.

A. B. Harvard, 1907; A. M. Harvard, 1908. Instructor in Physics, Kansas, 1910-13. Present position, 1913.

HERBERT BARKER HUNGERFORD,⁷ Assistant Professor of Entomology.

A. B. Kansas, 1911; A. M. Kansas, 1913. Instructor in Entomology, Kansas, 1911-13. Present position, 1913.

PAUL VANCE FARAGHER, Assistant Professor of Chemistry.

A. B. Kansas, 1909; Ph. D. Massachusetts Institute of Technology, 1913. Present position, 1913.

EDMUND DRESSER CREESMAN, Assistant Professor of Latin.

A. B. Kansas, 1910; A. M. Kansas, 1911; Ph. D. Yale, 1913. Present position, 1913.

CHARLES HOMER TALBOT, Head of Municipal Reference Bureau.

A. B. Wisconsin, 1910. Present position, 1913.

PAUL TEETOR, Clay Specialist.

A. B. Miami, 1909. Present position, 1913.

JOHN DILLER GARVER, Assistant Professor of Mechanical Engineering.

B. S. Kansas, 1910. Instructor in Mechanical Engineering, Kansas, 1912-14. Present position, 1914.

MARK SKIDMORE, Assistant Professor of Romance Languages.

A. B. Missouri, 1905; B. S. in Ed. Missouri, 1906; A. M. Illinois, 1909. Instructor in Romance Languages, Dartmouth, 1911-13. Present position, 1913.

RALPH EMERSON CARTER, Assistant Professor of Education.

Ph. B. Franklin, 1906; A. M. Chicago, 1911. Instructor in Education, Texas, 1912-13. Present position, 1913.

FRANK LOGAN BROWN, Assistant Professor of Mechanics.

B. S. in C. E. Colorado, 1911. Instructor in Civil Engineering, Colorado, 1912-13. Present position, 1913.

6. Absent on leave.

7. Absent on leave.

WALTER STERRITT LONG, Assistant Professor of Chemistry, in charge of Food Laboratory.

A. B. Ohio Wesleyan, 1905; A. M. Ohio Wesleyan, 1908. Assistant in Chemistry, 1911-12. Present position, 1913.

NADINE NOWLIN, Assistant Professor of Zoölogy.

A. B. Kansas, 1903; A. M. Kansas, 1903. Instructor in Zoölogy, 1906-13. Present position, 1913.

ANNA LOUISE SWEENEY, Assistant Professor of Piano.

Mus. B. Kansas, 1906. Instructor, Kansas, 1909. Present position, 1914.

HERMAN DOUTHITT, Assistant Professor of Zoölogy.

A. B. Oklahoma, 1910; A. M. Illinois, 1911. Assistant in Zoölogy, Chicago, 1912-14. Present position, 1914.

GEORGE WEATHERWORTH STRATTON, Assistant Professor of Chemistry.

A. B. Colorado, 1907; A. M. Ohio State, 1909; Ph. D. Ohio State, 1912. Instructor in Chemistry, Ohio State, 1909-12; Assistant Professor of Chemistry, Kansas, 1912-13. Present position, 1914.

CHESTER ARTHUR BUCKNER,⁸ Assistant Professor of Education.

A. B. Iowa, 1909; A. M. Iowa, 1911. Present position, 1914.

HARRY ASHTON ROBERTS, Assistant Professor of Civil Engineering.

B. S. Illinois, 1902. Present position, 1914.

JOSEPH EDWARD WELKER, Assistant Professor of Sanitary Engineering.

B. S. Clarkson School of Technology, 1913; M. of C. E. Harvard Graduate School of Applied Sciences, 1914. Present position, 1914.

ELLIS BAGLEY STOUFFER, Assistant Professor of Mathematics.

A. B., A. M. Drake, 1907; Ph. D. Illinois, 1911. Present position, 1914.

WILLIAM MCGLASHAN DUFFUS, Assistant Professor of Economics.

A. B. Leland Stanford, 1910; A. M. Wisconsin, 1913. Present position, 1915.

GRACE MIRIAM CHARLES, Assistant Professor of Botany.

A. B. Oberlin, 1900; A. M. Chicago, 1905; Ph. D. Chicago, 1910. Instructor in Botany, Kansas, 1911-15. Present position, 1915.

BENJAMIN J. CLAWSON,⁹ Assistant Professor of Bacteriology.

B. S. Central, 1909; A. M. Kansas, 1912. Instructor in Bacteriology, Kansas, 1912-15. Present position, 1915.

JACOB OSCAR JONES, Assistant Professor of Hydraulics.

B. S. Kansas, 1912; M. S. Cornell, 1915. Instructor in Civil Engineering, Kansas, 1912-14. Present position, 1915.

BLAINE FREE MOORE, Assistant Professor of Political Science.

A. B. Kansas, 1901; A. M. Illinois, 1908; Ph. D. Columbia, 1913. Division Superintendent and Member of the Provincial Council in the Philippine Islands, 1901-06; Instructor in Government, University of Michigan, 1909-10; Assistant Professor of Political Science, George Washington University, 1910-15; Lecturer in Political Science, University of Wisconsin, 1913-14. Present position, 1915.

HAROLD GREENE INGHAM, Secretary of Correspondence Study Department.

A. B. Milton, 1909. Instructor in Business Administration, Wisconsin, 1913-15. Present position, 1915.

JOSEPHINE MAY BURNHAM, Assistant Professor of English.

Ph. B. University of Chicago, 1901; Ph. D. Yale, 1910. Instructor in English, Wellesley College, 1902-12; Associate Professor of English, Wellesley College, 1912. Present position, 1915.

8. Absent on leave.

9. Absent on leave.

JOHN WAINRIGHT EVANS, Assistant Professor of Journalism.

A. B. Princeton, 1907. Instructor in English, University of Arkansas, 1912-15. Present position, 1915.

FRANK EDGAR MELVIN, Assistant Professor of Modern European History.

A. B. Kansas, 1906; A. M. Kansas, 1909; Ph. D. Pennsylvania, 1913; Assistant in History, Illinois, 1909-12; Lecturer in History, Pennsylvania, 1913-15; Assistant Professor of Modern European History, Cornell, 1915-16. Present position, 1916.

WILLIAM LEWIS ELKENBERRY, Assistant Professor of Education.

B. S. Michigan, 1894; Instructor in Science, Mt. Morris College, 1894-1901; Instructor in Botany, University High School, Chicago, 1909-16; Assistant in Natural Science, Chicago, 1909-16. Present position, 1916.

FREDERICK WILLIAM BRUCKMILLER, Assistant Professor of Chemistry.

A. B. Kansas, 1912; A. M. Kansas, 1915. Instructor in Chemistry, Kansas, 1912-13; Chemist of State Water Survey. Kansas, 1913-16. Present position, 1916.

ROSE RUTH MORGAN, Assistant Professor of Rhetoric.

A. B. Kansas, 1894; A. M. Kansas, 1905. Instructor in Rhetoric, 1910-16. Present position, 1916.

AMIDA STANTON, Assistant Professor of Romance Languages.

A. B. Kansas, 1904; A. M. Kansas, 1910. Instructor in Romance Languages, 1910-16. Present position, 1916.

HELEN GAILE JONES, Assistant Professor of German.

Ph. B. DePauw, 1900; A. M. Kansas, 1914; Instructor in German, Kansas, 1910-16. Present position, 1916.

JOHN JEFFERSON WHEELER, Assistant Professor of Mathematics, and University Marshal.

A. B. Indiana, 1905; A. M. Kansas, 1913; Professor of Mathematics, Friends, 1905-11; Instructor in Mathematics, Kansas, 1911-16. Present position, 1916.

LEON B. MCCARTY, Assistant Professor of Physical Education.

A. B. Ohio State, 1910; A. M. Ohio State, 1911; Instructor in Rhetoric, Kansas, 1912-16. Present position, 1916.

SOLOMON LEFSCHETZ, Assistant Professor of Mathematics.

M. E. Ecole Centrale, 1905; Ph. D. Clark, 1911. Instructor in Mathematics, Nebraska, 1911-13; Instructor in Mathematics, Kansas, 1913-16. Present position, 1916.

HARRY VICTOR EMANUEL PALMBLAD, Assistant Professor of German.

A. B. Columbia, 1907; A. M. Columbia, 1910. Instructor in Extension Division, Columbia, 1910-11. Instructor in German, Western Reserve, 1911-12; Instructor in German, Columbia, 1912-14; Instructor in German, Kansas, 1914-16. Present position, 1916.

FRANCIS ELLIS JOHNSON, Assistant Professor of Electrical Engineering.

A. B. Wisconsin, 1906; E. E. Wisconsin, 1909. Instructor in Electrical Engineering, Rice Institute, 1912-15; Instructor in Electrical Engineering, Kansas, 1915-16. Present position, 1916.

RICHARD LEONIDAS GRIDER, Assistant Professor of Mining.

E. M. Colorado School of Mines, 1905. Instructor in Mining, University of Oregon, 1909-10; Instructor in Mining, Kansas, 1915-16. Present position, 1916.

GEORGE CLARK, Assistant Professor of Physical Education.

B. S. Illinois, 1916. Present position, 1916.

MANUEL CONRAD ELMER, Assistant Professor of Sociology.

B. S. Northwestern College, 1911; A. M. Illinois, 1912; Ph. D. Chicago, 1914. Professor of Economics and Sociology, Fargo College, 1914-16; Lecturer in Sociology, Minnesota, Summer, 1916. Present position, 1916.

RAYMOND CECIL MOORE, Assistant Professor of Geology and Paleontology, and State Geologist.

A. B. Denison, 1913; Ph. D. Chicago, 1916. Assistant in Geology, Chicago, 1914-16; Instructor in Geology, Chicago, 1916. Present position, 1916.

WINTHROP PERRIN HAYNES, Assistant Professor of Geology, Mineralogy, and Petrology.

A. B. Harvard, 1910; A. M. Harvard, 1912; Ph. D. Harvard, 1914. Assistant in Geology, Harvard, 1908-16; Instructor in Geology, Radcliffe, 1911-14; Instructor in Geology, Wellesley, 1914-16. Present position, 1916.

CHARLES BUTLER HARRISON, Assistant Professor of Physical Education.

A. B. Oberlin, 1914; B. P. E., Y. M. C. A. College, Chicago, 1914. Present position, 1916.

JOHN ISE, Assistant Professor of Economics.

Mus. B. Kansas, 1908; A. B. Kansas, 1910; LL. B. Kansas, 1911; A. M. Harvard, 1912; Ph. D. Harvard, 1914; Assistant in Economics, Harvard, 1912-13; Assistant Professor of Economics, Iowa State College, 1914-15; Associate Professor of Economics, Iowa State College, 1915-16. Present position, 1916.

SAMUEL ORRICK RICE, Director of Publicity and Assistant Professor of Journalism.

Present position, 1916.

ROBERT MORSE WOODBURY, Assistant Professor of Economics.

A. B. Clark University, 1910; A. M. Clark University, 1912; Ph. D. Cornell, 1915; Instructor in Economics, Cornell, 1912-13; Instructor in Economics, Cornell, 1915-16. Present position, 1916.

HARRY DORR HARPER, Assistant Professor of Economics.

A. B. Minnesota, 1915; A. M. Minnesota, 1916; Instructor of Accounting University of Minnesota, 1915-16. Present position, 1916.

PETER WALTER CLAASSEN, Assistant Professor of Entomology.

A. B. Kansas, 1913; A. M. Kansas, 1915; Graduate Assistant in Entomology, Cornell University, 1915-16. Present position, 1916.

JOHN G. HAYDEN, Assistant Professor of Surgery.

B. S. Chicago, 1902; M. D. Rush, 1904. Present position, 1909.

EDWARD PARK HALL, Assistant Professor of Otorhinolaryngology.

M. D. Ensworth Medical, 1897. Present position, 1911.

ROBERT DOUGLAS IRLAND, Assistant Professor of Obstetrics.

M. D. Kansas, 1909. Instructor in Obstetrics, Kansas, 1911-15. Present position, 1915.

INSTRUCTORS.

EUGENE SMITH, Demonstrator in Anatomy.

M. D. Rush 1876. Present position, 1903.

LALIA VIOLA WALLING, Instructor in Physiology.

A. B., A. M. Kansas, 1907. Present position, 1908.

ESTHER WILSON, Instructor in German.

A. B. Kansas, 1901; A. M. Kansas, 1902. Present position, 1908.

MAY GARDNER,¹ Instructor in Romance Languages.

A. B. Kansas, 1897. Present position, 1909.

ALICE WINSTON, Instructor in Rhetoric.

A. B. Chicago, 1898; A. M. Chicago, 1903. Present position, 1909.

MARIA LEVERING BENSON, Instructor in Design and Ceramics.

Graduate, Newcomb Art School. Present position, 1909.

1. Absent on leave, second semester.

HELEN MAUD CLARKE, Instructor in Correspondence Study.

A. B. Kansas, 1903; A. M. Kansas, 1907; Ph. D. Cornell, 1910. Present position, 1910.

HUBERT WILTFONG, Instructor in Forging.

Present position, 1911.

NELLIE MAY STEVENSON, Instructor in Correspondence Study.

A. B. Kansas, 1907. Present position, 1911.

HEARTY EARL BROWN,² Instructor in Rhetoric.

A. B. Michigan, 1909; A. M. Michigan, 1910. Present position, 1912.

SARA GRANT LAIRD, Instructor in Rhetoric.

A. B. Oberlin, 1904; A. M. Columbia, 1912. Present position, 1912.

MYRTLE GREENFIELD, Bacteriologist of State Water and Sewage Laboratory.

A. B. Kansas, 1911; A. M. Kansas, 1912. Present position, 1912.

JOSEPH COLBERT MCCANLES, Instructor in Band Instruments.

B. S. Kansas Christian, 1907; LL. B. Kansas, 1909. Present position, 1910.

MAUD MILLER, Instructor in Piano.

Mus. B. Kansas, 1898. Present position, 1904.

JOHN BENNETT WHELAN, Instructor in Chemistry.

A. B. Hillsdale, 1903; A. M. Nebraska, 1908. Present position, 1913.

PEARL EMLEY, Instructor in Piano and Organ.

Mus. B. Kansas, 1909; Mus. M. Kansas, 1913. Present position, 1913.

EVANGELINE DOWNEY TEETOR,³ Instructor in Home Economics.

A. B., B. S. Wyoming, 1910; A. M. Chicago, 1913. Present position, 1913.

CORA IRENE REYNOLDS, Instructor in Voice.

Mus. B. Kansas, 1912. Present position, 1913.

HELEN RHODA HOOPES, Instructor in Rhetoric.

A. B. Kansas, 1913; A. M. Kansas, 1914. Present position, 1914.

CAROLINE BAUMANN SPANGLER, Instructor in German.

B. D. Kansas, 1881; A. B. Kansas, 1883. Present position, 1914.

WILLARD AUSTIN WATTLES, Instructor in Rhetoric.

A. B. Kansas, 1909; A. M. Kansas, 1911. Instructor in English, Massachusetts Agricultural College, 1911-14. Present position, 1914.

ESTHER LYDIA SWENSON, Instructor in Rhetoric.

A. B. Minnesota, 1911; A. M. Minnesota, 1914. Present position, 1914.

MARGARETHE CAROLINE HOCHDOERFER, Instructor in German.

A. B. Wittenberg, 1906; A. M. Illinois, 1909. Present position, 1914.

IVAN PAUL PARKHURST, Instructor in Chemistry.

B. S. Kansas, 1914. Present position, 1914.

WINFRED WEEDEN HAWKINS, Instructor in German.

A. B. Missouri, 1913; A. M. Missouri, 1914. Present position, 1914.

HAZEL KATHERINE ALLEN,⁴ Instructor in Home Economics.

Ph. B. Chicago, 1913. Present position, 1914.

2. Absent on leave.

3. Appointed for first semester.

4. Absent on leave, first semester.

CHARLES WESLEY WHITE, Instructor in Machine-shop Practice.

Present position, 1914.

CLARENCE ESTES, Analyst in Food Laboratory.

B. S. in Chem. Eng. Missouri, 1908; Chem. Eng. Missouri, 1909. Instructor, Iowa, 1909-12. Present position, 1914.

ARTHUR WILLIAM LARSEN, Instructor in Mathematics.

A. B. Wisconsin, 1913; A. M. Wisconsin, 1915. Assistant Department of Mathematics, University of Wisconsin, 1914-15. Present position, 1915.

HARRY MONROE CURFMAN, Instructor in Electrical Engineering.

B. S. Kansas, 1915. Present position, 1915.

HERBERT FLINT, Instructor in Rhetoric.

A. B. Kansas, 1914. Present position, 1915.

HAZEL HELEN PRATT, Instructor in Physical Education.

A. B. Ohio State, 1914; Graduate, Harvard School of Physical Education, 1915. Physical Director, Western College for Women, Oxford, Ohio, 1914-15. Present position, 1915.

LEONARD LEO STEIMLEY, Instructor in Mathematics.

A. B. Indiana, 1912; A. M. Indiana, 1913. Present position, 1915.

LAURENS ELLIS WHITEMORE, Instructor in Physics.

A. B. Washburn College, 1914; A. M. Kansas, 1915. Present position, 1915.

OSCAR LEWIS MAAG,* Instructor in Chemistry.

B. S. Kansas, 1913. Assistant Instructor, Kansas, 1913-15. Present position, 1915.

CLIFFORD WINSLOW SEIBEL, Instructor in Chemistry.

B. S. Kansas, 1913. Present position, 1913.

OSCAR ROCKLUND, Instructor in Foundry.

Present position, 1913.

CLARENCE SMITH, Instructor in Physiology.

A. B. Kansas, 1915. Assistant Department of Physiology and experimental Pharmacology, 1913-15. Present position, 1915.

BENJAMIN PERCY YOUNG, Field Assistant in Entomology.

B. S. Kansas, 1908. Present position, 1915.

AVIS GWINN, Instructor in Home Economics.

A. B. Illinois, 1914. Present position, 1915.

WALTER BLAINE BODENHAFFER, Instructor in Sociology.

A. B. Indiana, 1911; LL. B. Indiana, 1912; A. M. Kansas, 1915. Present position, 1915.

PETER ANTON FREDERIK APPELBOOM, Instructor in Romance Languages.

Graduate, Academie Royale Maritime of Holland. Present position, February, 1915.

FRANK BARNES THAYER, Instructor in Journalism.

A. B. Oberlin, 1912; A. M. Wisconsin, 1916. Present position, 1916.

ODIS HERSCHEL BURNS, Instructor in Public Speaking.

A. B. Kansas, 1916; Columbia School of Expression, Summer, 1916. Present position, 1916.

FRANK JAMES ZUCK, Instructor in Practical Pharmacy.

Ph. G. Illinois, 1908. Present position, 1916.

* Resigned January, 1917.

JAMES LISLE WILLIAMS, Instructor in Biological Chemistry.

B. S. Kansas State Manual Training Normal School, 1914; A. B. Kansas, 1915; A. M. Kansas, 1916. Present position, 1916.

EVELYN FOGG OLCOTT, Instructor in Voice.

Graduate Institute of Musical Art, New York. Present position, 1916.

JAY McDONALD MILLIGAN, Instructor in Bacteriology.

A. B. Geneva College, 1914. Present position, 1916.

DONALD GILDERSLEEVE PATERSON, Instructor in Psychology.

A. B. Ohio State, 1914; A. M. Ohio State, 1915. Graduate Assistant in Psychology, Ohio State, 1914-15; Laboratory Assistant in Psychology, Ohio State, 1915-16. Present position, 1916.

ANNA GUNILLA SABY, Instructor in Romance Languages.

A. B. Wisconsin, 1908; A. M. Wisconsin, 1909. Instructor in Spanish, Oregon Agricultural College, 1909-11; Assistant in German, Wisconsin, 1912-13; Adjunct Professor of Romance Languages, Randolph-Macon Women's College, 1913-16. Present position, 1916.

EARLE BRENNEMAN MILLER, Instructor in Mathematics.

A. B. Colorado, 1914; A. M. Chicago, 1916. Present position, 1916.

ELMER EDWARD HARTMAN, Instructor in Electrical Engineering.

B. S. Kansas, 1913. Present position, 1916.

MARION KENNETH FORWARD, Instructor in Rhetoric.

Ph. B. Brown, 1914. Assistant in English, Brown, 1914-16. Present position, 1916.

MILES LAWRENCE HANLEY, Instructor in Rhetoric.

A. B. Wittenberg, 1914; A. M. Ohio State, 1916; Assistant in English, Ohio State, 1914-16. Present position, 1916.

JAMES DOW MCCALLUM, Instructor in Rhetoric.

A. B. Columbia, 1914; A. M. Columbia, 1915. Present position, 1916.

ARTHUR JACKSON MIX, Instructor in Plant Pathology.

A. B. Hamilton, 1910; Ph. D. Cornell University, 1916. Assistant Botanist, New York Agricultural Experiment Station, 1915-16. Present position, 1916.

NORMAN FRASER STRACHAN, Instructor in Sanitary Engineering, and Assistant Engineer of the State Board of Health.

B. S. Kansas, 1915. Present position, 1916.

SANTIAGO GUTIERREZ, Instructor in Romance Languages.

Licencias es Ciencias, University of Lyons, France, 1897. Professor of Chemistry and physics, Liceo of San José, Costa Rica, and in College of Señoritas, 1905-16. Present position, 1916.

RODOLPHE OSCAR HOFFMAN, Instructor in Romance Languages.

Certificat d' Humanités Moyennes Complètes, Bruxelles, 1907; Graduate State University, Ghent, Belgium, 1911; Instructor in French, Northwestern University, Evanston, Illinois, 1915-16. Present position, 1916.

DANIEL DA CRUZ, Instructor in Romance Languages.

Graduate, College of Montariol, Braga, Portugal, 1901; Ph. D. Catholic University of America, 1915. Professor of Portuguese in Beira, Mozambique, 1906-08; Professor of Portuguese in College of Montariol, Braga, Portugal, 1908-10. Present position, 1916.

ALBERT HARTWELL JEWELL, Instructor in Sanitary Engineering, and Assistant Engineer of the State Board of Health.

B. S. Michigan Agricultural College, 1915; M. S. University of Michigan, 1916. Present position, 1916.

JESSIE JEAN SCHINDLER, Instructor in Rhetoric.

A. B. Wisconsin, 1910; A. M. Wisconsin, 1911. Instructor in Public Speaking and English, Wisconsin, 1911-16. Present position, 1916.

BERTHA MIX, Instructor in Physical Education.

A. B. Kansas, 1912. Present position, 1916.

PAUL BOWEN LAWSON, Instructor and Field Assistant in Entomology.

A. B. Oskaloosa, 1909. Present position, 1916.

FELIPE MOLINA,* Instructor in Romance Languages.

B. L. Nicaragua. Professor of Philosophy, Colegio de Señoritas, San José, Costa Rica, 1913; Professor of History, Colegio, Cartago, Costa Rica, 1914-15; Professor of English and History in the Instituto Nacional, Alajuela, Costa Rica, 1916. Present position, 1917.

ARTHUR HERMAN HUISKEN, Assistant in State Chemical Research.

B. S. University of Illinois, 1915; M. S. University of Michigan, 1916. Present position, 1917.

KENNETH PRINGLE,* Instructor in Rhetoric.

A. B. Kansas, 1916. Present position, 1917.

GERHARD BAERG,* Instructor in German.

A. B. Kansas, 1916. Present position, 1917.

WILBUR WILLIS SWINGLE,* Instructor in Zoölogy.

A. B. Kansas, 1915; A. M. Kansas, 1916. Present position, 1917.

CLARENCE B. FRANCISCO, Instructor in Orthopedic Surgery.

M. D. Kansas, 1907. Present position, 1905.

CLIFFORD C. NESSELRODE, Instructor in Surgical Anatomy.

M. D. Kansas, 1906. Present position, 1905.

JOSEPH L. McDERMOTT, Instructor in Roentgen Therapy.

M. D. Kansas, 1907. Present position, 1914.

THOMAS GROVER ORR, Instructor in Surgery, Chief of the Dispensary, and Pathologist to the Bell Memorial Hospital.

A. B. University of Missouri, 1907; M. D. Johns Hopkins University, 1910. Instructor in Bacteriology, University of Kansas, 1915. Present position, 1915.

HERBERT F. VANORDEN, Instructor in Gynecology and Obstetrics.

Ph. B. Yale, 1907; M. D. Johns Hopkins, 1910. Present position, 1915.

O. L. CASTLES, Instructor in Surgery.

M. D. University of Michigan, —; Interne, Kansas City General Hospital, —; Present position, 1917.

ASSISTANT INSTRUCTORS.

LARRY M. PEACE, Preparator and Demonstrator in the Botanical Laboratory.

A. B. Kansas, 1901; A. M. Kansas, 1906. Present position, 1902.

HANDEL T. MARTIN, Assistant Curator of Paleontology.

Present position, 1907.

CHARLES D. BUNKER, Assistant Curator of Mammals, Birds and Fishes.

A. B. Kansas, 1901; A. M. Kansas, 1906. Present position, 1902.

* Appointed for second semester.

RAYMOND BEAMER, Assistant Curator of the Entomological Collections.

A. B. Kansas, 1913. Present position, 1914.

KATE SEARS, Assistant Instructor in Botany.

Present position, 1911.

WILLIAM BYRON BROWN, Assistant Instructor in Journalism and Superintendent of Printing Plant.

Present position, 1913.

WENDELL MITCHELL LATIMER, Assistant Instructor in Chemistry.

A. B. Kansas, 1915. Present position, 1915.

RAY QUINCEY BREWSTER, Assistant Instructor in Chemistry.

A. B. Ottawa, 1914; A. M. Kansas, 1915. Present position, 1915.

LENA MAE SMYTH, Technical Assistant in Bacteriology and Pathology.

A. B. Nebraska, 1912. Present position, 1915.

AVIS TALCOTT, Assistant Instructor in Chemistry.

A. B. Rockford College, 1906. Instructor in Chemistry, Iowa State College. Present position, 1915.

EARL CLEVELAND O'ROKE,* Assistant Instructor in Zoölogy.

A. B. Kansas, 1912; A. M. Kansas, 1916. Present position, 1915.

VIVIAN SUSANNE STRAHM, Technical Assistant in Anatomy.

A. B. Kansas, 1914; A. M. Kansas, 1916. Present position, 1915.

EMILY VICTORIA BERGER, Assistant Instructor in Chemistry.

A. B. Kansas, 1914. Present position, 1916.

LAWRENCE A. HARTLEY, Assistant Instructor in Shop Practice, and Instrument Maker.

Mechanician in Fowler Shops, 1914-16. Present position, 1916.

KATE DAUM, Assistant Instructor in Home Economics.

A. B. Kansas, 1913; A. M. Kansas, 1916. Present position, 1916.

SYBIL WOODRUFF, Assistant Instructor in Home Economics.

A. B. Kansas, 1916. Present position, 1916.

JESSIE LEONE WRIGHT, Laboratory Assistant in Home Economics.

Graduate, LaCrosse, Wisconsin, Normal, Present position, 1916.

LAFORCE BAILEY, Assistant Instructor in Architecture.

B. S. in Architecture, Illinois, 1915; M. S. in Architecture, Illinois, 1916.

AGNES ANDERSON MURRAY, Assistant Instructor in Chemistry.

A. B. Baker, 1909; A. M. Kansas, 1911. Analyst in Food Laboratory, Kansas, 1911-15. Present position, 1916.

HAROLD LELAND LENTZ, Assistant Instructor in Chemistry.

A. B. Kansas, 1916. Present position, 1916.

ROLLA NEIL HARGER, Assistant Instructor in Chemistry.

A. B. Washburn, 1915. Fellow in Chemistry, Kansas, 1915-16. Present position, 1916.

HAZEL MACGREGOR RICE, Assistant Instructor in Mathematics.

A. B. Yankton College, 1906; A. M. University of Illinois, 1909. Instructor in Mathematics, University of Kansas, 1911-14. Present position, 1917.

* Resigned January, 1917.

ALICE LENORE BROWN, Assistant Instructor in Zoölogy.

A. B. Kansas, 1916. Present position, 1917.

WALTER HOUSLEY WELLHOUSE,* Assistant Instructor in Entomology.

A. B. Kansas, 1913. Present position, 1917.

FRANCIS IVAN MARTIN, Research Assistant in the Division of State
Chemical Research.

Present position, 1917.

ERNEST ELWOOD TIPPEN,* Assistant Instructor in Physiology.

Present position, 1917.

* Appointed for second semester.

THE UNIVERSITY.

The University embraces the following schools and divisions:

THE GRADUATE SCHOOL.
THE COLLEGE OF LIBERAL ARTS AND SCIENCES.
THE SCHOOL OF ENGINEERING.
THE SCHOOL OF FINE ARTS.
THE SCHOOL OF LAW.
THE SCHOOL OF PHARMACY.
THE SCHOOL OF MEDICINE.
THE SCHOOL OF EDUCATION.

THE SUMMER SESSION DIVISION.
THE UNIVERSITY EXTENSION DIVISION.
THE DIVISION OF ATHLETICS.
THE DIVISION OF LIBRARIES.
THE DIVISION OF MUSEUMS.
THE DIVISION OF PUBLICATIONS.
THE DIVISION OF STATE SERVICE WORK.
THE DIVISION OF UNIVERSITY SURVEYS.

THE SCHOOLS.

THE GRADUATE SCHOOL.¹

The Graduate School is open to those holding a bachelor's degree from an institution of recognized standing.

The School confers the following advanced degrees: Doctor of philosophy, master of arts, master of science, civil engineer, mechanical engineer, engineer of mines, chemical engineer, and electrical engineer. Students who take the master's degree in the minimum period of one year must be fully prepared to do graduate work; those who are not so prepared find it necessary to take a longer time. The degree of doctor of philosophy may be given after three years of resident graduate work, the last year, at least, being spent at the University of Kansas. Graduates of engineering in this University and masters of science who majored in engineering in the Graduate School may become candidates for professional engineering degrees after three years of professional service.

For the encouragement of higher education, seventeen University fellowships are given to students who have excelled in undergraduate work, and ten fellowships are provided for graduates of Kansas colleges.

1. Detailed information will be found in Section II.

THE COLLEGE OF LIBERAL ARTS AND SCIENCES.²

The College of Liberal Arts and Sciences offers a four-year curriculum, based upon a four-year high-school course and leading to the bachelor's degree. It includes courses offered by the following departments:

Bacteriology.	Journalism.
Botany.	Latin Language and Literature.
Chemistry.	Mathematics.
Design.	Music.
Economics and Commerce.	Physics and Astronomy.
English Language and Literature.	Public Speaking.
Entomology.	Philosophy and Psychology.
Geology and Mineralogy.	Physical Education.
Germanic Languages and Literatures.	Physiology.
Greek Language and Literature.	Romance Languages and Literatures.
History and Political Science.	Sociology.
Home Economics.	Zoölogy.

While the courses are largely elective, the requirements governing election have been made with a view to securing a well-rounded program as well as a reasonable degree of specialization.

The purpose of the College is to provide a liberal education; but College students who intend to become candidates for professional degrees may elect certain courses in some of the professional schools.

THE SCHOOL OF ENGINEERING.³

Opportunities for study are offered to high-school graduates who wish to fit themselves for the technical branches of industrial work. The lines of study as they are formulated are under the usual engineering titles, as follows:

Civil Engineering, pertaining mainly to transportation, to design and construction of bridges and public works, to municipal and sanitary problems, and to government work in the survey of lands, in irrigation projects, etc.

Electrical Engineering, pertaining mainly to design, manufacture and operation of electric-power generating machinery, telephone apparatus and electrical instruments, and public utilities plants where such equipment is employed.

Mechanical Engineering, pertaining mainly to manufacturing processes and the plants for carrying on those processes, with especial attention given to the design and construction of machinery. Steam, gas, and refrigeration engineering are included.

Mining Engineering, emphasizing in equal degree the mining processes for coal and metal production, and the subsequent treatment of ores.

Chemical Engineering, pertaining mainly to chemical analytical methods and to the great variety of manufacturing processes which have a chemical basis.

2. Detailed information will be found in Section III.

3. Detailed information will be found in Section IV.

Architectural Engineering, devoted to the design and construction of all classes of buildings. Much attention is given to pure architectural design, as well as to structural problems.

Engineering and Administrative Science, in which economics courses are grouped with engineering fundamentals to form the basis for a business career with transportation or manufacturing enterprises.

The curriculum is prepared in two forms. One is more strictly technical and provides for the completion of the necessary amount of work in four years by those who are prepared to carry heavy work. Many students find it desirable to take more time. The degree given is bachelor of science in — engineering. The other provides for five full years of work, the first year to be taken in the College of Arts and Sciences. The degree given is bachelor of science. The latter plan is recommended to all recent graduates of high schools.

THE SCHOOL OF FINE ARTS.⁴

The School of Fine Arts is made up of the Department of Music and the Department of Painting. It offers courses in piano, organ, violin, violoncello playing, voice culture, drawing and painting, and public-school music.

The four-year curriculum in music leads to the degree of bachelor of music; in painting, to the degree of bachelor of painting. An artist's certificate is given on completion of a four-year special curriculum in piano, organ, violin, violoncello or voice culture. A teacher's certificate is given on completion of a three-year curriculum in the same subjects. A teacher's certificate is also given on completion of the two-year special curriculum in public-school music or in public-school drawing. On completion of the two latter curricula the State Board of Education will grant a special state certificate entitling the holder to teach music or drawing in any of the graded or high schools of the state.

THE SCHOOL OF LAW.⁵

The School of Law offers three years of legal instruction leading to the degree of bachelor of law. One year of college work in addition to graduation from an accredited high school is required for admission.

The object of the School is to teach the principles of the common law and to furnish a course of legal instruction that shall prepare the student to deal with legal problems and to practice in any state in the Union.

Provision is also made to give those who do not expect to practice law, but who desire a knowledge of certain branches of the law for business purposes, such instructions as may be best fitted to their needs.

4. Detailed information will be found in Section V.

5. Detailed information will be found in Section VI.

THE SCHOOL OF PHARMACY.⁶

The School of Pharmacy is organized to give instruction and practical training in all branches connected with the pharmaceutical profession. The work is open to graduates of accredited high schools and to students having an equivalent preliminary education.

Three complete curricula are offered: a two-year curriculum leading to the degree of graduate in pharmacy, a three-year curriculum leading to the degree of pharmaceutical chemist, and a four-year curriculum leading to the degree of bachelor in pharmacy.

Provision is also made for those who desire to pursue special lines of pharmaceutical investigation, regardless of a degree.

Connected with the School is the state laboratory for drug analysis, which affords ample opportunity for those who are preparing for governmental and state work.

THE SCHOOL OF MEDICINE.⁷

The School of Medicine offers a four-year medical curriculum based on two years of college work and leading to the degree of doctor of medicine. The work of the first year and a half is done at Lawrence, in the main laboratories of the University. This work embraces the scientific subjects, or so-called "medical sciences," and forms the basis for the practical work of the last two years. The last two and a half years' work is done at Rosedale, where the Bell Memorial Hospital, owned and conducted by the University of Kansas, is located.

The Training School for Nurses, at the Bell Memorial Hospital in Rosedale, offers a course extending over two years and a half.

THE SCHOOL OF EDUCATION.⁸

The School of Education has for its functions the professional training of teachers and superintendents and the maintenance of a bureau of school service.

Work done in the School of Education is based upon two years of college work and leads to the degree of bachelor of science in education. Candidates for the college degree of bachelor of arts or the graduate degree of master of arts may elect education courses, subject to the regulations of the faculty concerned.

The faculty of the School of Education grants the University Teacher's Diploma to persons receiving any one of the degrees mentioned above, on the fulfillment of conditions described in the bulletin of the School of Education. This Teacher's Diploma entitles the holder to a Kansas State Teacher's Certificate.

6. Detailed information will be found in Section VII.

7. Detailed information will be found in Section VIII.

8. Detailed information will be found in Section IX.

THE DIVISIONS.

SUMMER SESSION.⁹

There are two terms of the Summer Session, of six weeks and four weeks, respectively, each independent of the other in the courses offered. The first term begins immediately after Commencement Day. The second term begins the day after the first term closes.

Most of the work offered in the Summer Session is chosen from the courses given regularly in the various schools, and may be counted toward degrees in the same way as if taken in the regular academic year.

The maximum amount of credit that may be earned in the Summer Session is six hours for the first term and four hours for the second.

UNIVERSITY EXTENSION.¹

Through the Correspondence-study Department the following courses are offered:

First. Regular University studies which may, under approved conditions, be taken for credit toward a degree.

Second. High-school and preparatory studies for those who can not arrange to attend the established institutions.

Third. Vocational courses, which supply knowledge and training that have a direct bearing upon advancement and efficiency in given occupations.

Fourth. Advanced courses, designed to help those in professional or practical life to keep in touch with certain advancing conditions of science and knowledge.

Classes under regular University instructors can be offered in a limited number of communities where several desire to take up the same course. All courses offered by the Correspondence-study Department, whether taken for University credit or not, are on a uniform basis with reference to the amount of work covered. Work which is satisfactorily completed has, therefore, a definite value.

ATHLETICS.²

Senate Regulation. The University Senate has adopted rules governing the standing of all those who represent the University in athletic contests. Good scholarship and gentlemanly conduct are required of all such contestants.

Athletic Association. This association is organized to promote and control the intercollegiate athletics of the University of Kansas. The

9. Detailed information will be found in Section X.

1. Detailed information will be found in Section XI.

2. Detailed information will be found in Section XII.

Chancellor is *ex officio* president, and there are five faculty and five student members. The athletic director is general manager of athletics. All forms of athletics are under the immediate control of the director and his assistants, who are also members of the faculty.

Intramural Athletics. The general athletics of the University include football, baseball, basket ball, track, tennis, and soccer. Intramural contests are held in all branches.

Intercollegiate Games. The University of Kansas is a member of the Missouri Valley Intercollegiate Athletic Association, and a full schedule of games in football, baseball, track, basket ball, and tennis is arranged with members of that association and other educational institutions.

LIBRARIES.²

The Libraries of the University contain 110,341 volumes and some 44,000 pamphlets. An annual appropriation of \$20,000 is devoted to the purchase of books. The periodical room receives 1143 periodicals and publications of learned societies, and 393 newspapers published in Kansas. The departments of Germanic Languages, Romance Languages, Latin, English, Education, American and European History, Sociology and Economics have special reading rooms in Spooner Library.

Nine departmental libraries are housed in the buildings used by their respective departments or schools each in charge of an assistant librarian.

MUSEUMS.²

The scientific collections belonging to the University are grouped according to the teaching departments in charge.

The botanical collection contains 10,000 identified and labeled specimens.

The entomological collections comprise about 26,000 species and 300,000 specimens.

Geology is represented by extensive collections of specimens in economic, petrographic and mineralogical groups.

In paleobotany and paleontology the collection is one of the most complete in America.

The Zoölogical collections are rich and varied.

The classical museum contains a collection of casts of Greek and Roman sculpture, *facsimile* reproductions of objects of art and utility, original coins, and photographs.

UNIVERSITY PUBLICATIONS.²

The University of Kansas Science Bulletin is maintained by the University as the medium for the publication of the results of original research by members of the University. Two or three volumes are issued in each academic year. The price of subscription is three dollars a volume. Individual numbers vary in price with the cost of publication.

University of Kansas Studies, *Humanistic Series*, is a series devoted to the presentation of the results of research along humanistic lines. The

2. Detailed information will be found in Section XII.

numbers are issued at irregular intervals. Each number is a complete monograph, and its price varies with cost of publication. Arrangements for exchange may be made by addressing the University Library.

The University Geological Survey Bulletins are issued from time to time as material for them is gathered.

The University Entomological Bulletins are reports issued in regular series from time to time, comprising the results of entomological investigations conducted by the University. These deal in part with applied problems of practical value referred to the University by various interests of the state, and in part with fundamental research problems presented by such investigations. These publications will be sent free to any citizen of the state upon application.

The Bulletin of the Engineering Experiment Station is the medium through which the results of investigations in engineering lines are published. Numbers are issued at irregular intervals, as material becomes available, usually two or three each year. It is under the direction of an Experiment Station staff. Communications should be addressed to the Director.

STATE SERVICE WORK.³

Entomological Field Work. In conjunction with the State Agricultural College, the University conducts the field work of the State Entomological Commission.

Water Analysis. The University maintains laboratories for the chemical and bacteriological examination of water. The special purpose of this examination is to assist Kansas communities to secure and preserve safe supplies of water.

Ceramics and Kansas Clays. The University is engaged in the examination of the clays of the state and the determination of their fitness for the fine and useful arts.

State Chemical Research. This division of the Department of Chemistry is engaged in the study of chemical problems in which the industries or the communities of Kansas may be interested.

Food and Drug Analysis. By legislative enactment it is the duty of the University to examine samples of food and drugs for their purity, and report to the State Board of Health.

Weights and Measures. The University has in its custody the sets of standard weights and measures of the state; and the deputy state sealer, who is a member of the faculty, tests weights and measures in the enforcement of the laws governing commercial standards.

Engineering Experiment Station. Numerous investigations and experiments with Kansas building stone, brick and stone for paving, the purification of sewage, the properties of coal, natural gas, and oils, the calibration of metering appliances for municipal service, etc., have been conducted and the results published in a series of bulletins.

3. Detailed information will be found in Section XII.

UNIVERSITY SURVEYS.³

Biological Survey. A biological survey of the state is being conducted by the departments of Botany, Zoölogy, and Entomology. The results are made known in special reports and in the science bulletins of the University.

Geological Survey. The work of the geological survey is carried on through field expeditions sent out annually. The results thus far have been published in ten volumes, besides many bulletins.

Water Survey. A survey of the waters of the state is being made by the University in conjunction with the United States Geological Survey and the State Board of Health.

HISTORY.

The idea of a State University in Kansas dates from the early days of Kansas territorial government. Each of the constitutions adopted for the territory of Kansas during the period of its memorable struggle provided for the establishment of an institution of higher learning, to be supported by public funds. The last of these, which became, on the admission of Kansas to the Union, the constitution of the state, declares that "provision shall be made by law for the establishment, at some eligible and central point, of a State University, for the promotion of literature and the arts and sciences."

By an act of Congress approved January 29, 1861, the day on which Kansas was admitted to statehood, seventy-two sections of land were set apart and reserved for the use and support of a State University. The state accepted the trust, and in 1863 the legislature selected the city of Lawrence as the location for the institution. One year later the legislature passed an act organizing the University and giving to it the name of "The University of Kansas." A charter was immediately drawn up, and the government of the institution was vested in a Board of Regents, appointed by the governor.

The board thus appointed held its first meeting on March 21, 1865, and decided to open a preparatory department as soon as the citizens of Lawrence should provide rooms for that purpose. This the citizens undertook to do, and by the middle of September, 1866, they were enabled, by the aid of gifts from various individuals and organizations, to erect the building now known as North College. The first faculty of the University had been elected by the Board of Regents in July of the same year, and on the 12th of September the University was opened to the young men and women of the state.

In 1876 the legislature of the state established a normal department, which, though successful, was discontinued in 1885. The Law School was opened in October, 1878, and the School of Pharmacy was established in 1885. A course in engineering was arranged as early as 1873, but re-

3. Detailed information will be found in Section XII.

mained a part of the collegiate department until 1891, when the School of Engineering was organized and the collegiate department became known as the School of Arts. During the same year the preparatory department was discontinued, and the departments of music and art, established in 1877, were combined to form the School of Fine Arts. The Graduate School was organized in 1896; and in 1899 the preparatory medical course, which had been offered in the collegiate department since 1880, was made independent as a School of Medicine, the first two years only being given. In 1905 the clinical departments were added at Rosedale, thus completing a four-year medical course. In 1904 the Board of Regents changed the name of the School of Arts to the College of Liberal Arts and Sciences. The Summer Session Division was established in 1903; the School of Education and the Division of University Extension were established in 1909; the Division of Athletics was established in 1915.

The Rev. R. W. Oliver, the first Chancellor of the University, resigned his position after one year of service, and was succeeded by Gen. John Fraser. In 1874 Dr. James Marvin was made Chancellor. His resignation, in 1883, was followed by the election of Dr. Joshua A. Lippincott, who served until June, 1889, when Mr. W. C. Spangler, a graduate of the University and a member of the Board of Regents, was appointed to act as Chancellor until the election of a regular incumbent. In 1890, Prof. Francis H. Snow, who had been a member of the faculty from the beginning, was elected. When, in 1901, Chancellor Snow resigned on account of failing health, Mr. Spangler again became acting Chancellor, serving until Dr. Frank Strong assumed the office, August 1, 1902.

In 1913 the powers belonging to the Board of Regents passed by legislative act to the newly constituted State Board of Administration.

GOVERNMENT.

THE BOARD OF ADMINISTRATION.

The legislature of 1913 established the Board of Administration of Educational Institutions, with full power to administer the affairs of the University, as well as of other schools, subject only to legislative enactments. This board consists of three members to be appointed by the governor, not more than two of whom shall belong to one political party, and not more than one of whom shall be a graduate of any one of the institutions named. Not more than one member shall be from one congressional district. The term of office is four years. The board maintains a business office at each of the state educational institutions under its control and also an office at the seat of government.

THE UNIVERSITY SENATE.

The University Senate consists of the Chancellor, the deans and directors of divisions, and all members of the instructional staff having the rank of professor or associate professor. The Senate has jurisdic-

tion over all internal matters involving general University policy. The Chancellor is *ex officio* chairman and executive officer of the Senate.

THE FACULTIES.

The faculty of each school consists of the Chancellor, the Dean, and all professors, associate professors, assistant professors and instructors giving work in that school. It has jurisdiction over all matters which concern primarily its own school. The Chancellor is chairman of each faculty. The Dean of each school is its executive officer.

DEPARTMENTAL FACULTIES.

A departmental staff consists of all members of its instructional force. It has jurisdiction over all matters which concern primarily its own internal policy.

UNIVERSITY DIVISION COMMITTEES.

A University division is a body having relations with more than one of the schools or departments of the University. The divisions are administered by committees, subject to the general regulations of the Senate. Each division has an executive officer, called the Director.

EQUIPMENT.

PROPERTY AND INCOME.

The University owns equipment, buildings, and grounds of an estimated value of \$2,000,000. It receives about \$52,000 yearly from fees and \$7200 from the land fund. For the biennium of 1915-1917 the state appropriated \$1,260,000.

THE CAMPUS.

The campus, comprising some 160 acres of hill top and hill slope, has so far contrived to retain much of its natural beauty. The buildings follow the curve of the hill; the walks take the line of least resistance; the trees in North Hollow form a tangled mass much appreciated by birds and art students. There has been almost no conventional planting.

The campus of the Medical School at Rosedale also lies high and is capable of artistic development.

BUILDINGS.

There are twenty-three University buildings, of which sixteen were erected by the state and seven by private gift.

North College was erected in 1866, at a cost of \$20,000. This sum was given by citizens of Lawrence.

Fraser Hall was erected in 1872. Its total cost has been approximately \$182,000, of which one-half was appropriated by the legislature, the other contributed by the city of Lawrence. In this building are located the executive offices of the University, including the Chancellor's office and

the office of the Registrar; the offices of the Dean of the College, the Alumni Secretary, the Adviser of Women, and the University Extension Division; the offices and recitation rooms of the Departments of English, German, Greek, Latin, Romance Languages and Home Economics, and the School of Education; also, the classical museum. The building is named in honor of Gen. John Fraser, the first active Chancellor of the University.

Medical Hall was erected in 1884, at a cost of \$12,000—\$8000 from interest on the permanent endowment fund of the University, and \$4000 appropriated by the legislature. The physiological laboratories are located on the second floor. The basement is occupied by the Department of Journalism.

Snow Hall was erected by the state in 1886, at a cost of \$50,000. In this building are located the laboratories and lecture rooms of the Departments of Bacteriology, Botany, Entomology, Zoölogy and Medical Physiology. The laboratories of the State Water Survey are located in the south side of the basement. The building is named in honor of Prof. Francis Huntington Snow.

The Heating Plant was erected by the state in 1887, at a cost of \$16,000, and after a fire in 1898 was rebuilt and equipped at a cost of \$30,000.

Spooner Library was erected in 1894, at a cost of \$75,000, through the generosity of William B. Spooner, of Boston. On the first or main floor are located the general reading room, a newspaper room, and the Librarian's and Cataloguer's offices.

The Chancellor's Residence was erected in 1894, at a cost of \$12,000, from the William B. Spooner bequest.

Blake Hall was erected by the state in 1895, at a cost of \$58,000. It is occupied by the Department of Physics and Astronomy. It is named in honor of Prof. Lucien Ira Blake.

Fowler Shops was completed in 1899, at a cost of \$21,000. It was given by Mr. George A. Fowler, of Kansas City, Mo., as a memorial of his father. It is devoted primarily to instruction in shop work.

The Chemistry and Pharmacy Building was completed in 1900, at a cost of \$70,000, appropriated by the legislature. The building is arranged specifically for laboratory purposes for the Departments of Chemistry and Pharmacy.

The Dyche Museum of Natural History, named in honor of Prof. Lewis L. Dyche, was erected by the state in 1902, at a cost of \$75,000. It houses collections in entomology, paleontology, mammals, and birds. Part of the basement is occupied by the Department of Anatomy.

Green Hall, named in honor of Dean James W. Green, was erected by the state in 1905, at a cost of \$65,000. It is occupied by the School of Law and the Department of Public Speaking.

The Robinson Auditorium-Gymnasium was erected by the state in 1905, at a cost of \$100,000. By removing the apparatus, the gymnasium may be transformed into an auditorium with a seating capacity of 3000. The

building is named in honor of Charles Robinson, first governor of Kansas, and his wife, Mrs. Sara T. D. Robinson.

The Eleanor Taylor Bell Memorial Hospital. The first section of the Bell Memorial Hospital, at Rosedale, was erected in 1905, at a cost of \$30,000, on property and by funds given to the University for that purpose by Dr. Simeon B. Bell, of Rosedale, and was named in memory of his wife. In 1911 a second section was built through an appropriation by the legislature of \$50,000. The combined hospital has about seventy-six beds, and is used as a teaching hospital. To it are sent county patients under the indigent poor law, the crippled children law, and the obstetrical service law.

The Clinical Laboratory at Rosedale was erected in 1906, at a cost of \$40,000, on property and by funds furnished by Dr. Simeon B. Bell.

The Service Building, erected by the state in 1908, contains the office of the superintendent of buildings and grounds, and the workmen's shops.

Marvin Hall was erected by the state in 1907, at a cost of about \$90,000. It contains equipment and classrooms for the general work of the School of Engineering. This building is named in honor of Frank O. Marvin, first Dean of the School.

The Power Plant and Mechanical Laboratory was completed in 1909, at a cost of about \$23,000. In the power-plant section are the power-generating machinery for lights and power for the University and the pumps for the regular water service and fire protection. The laboratory section contains equipment for instruction in technical engineering work.

Haworth Hall was erected by the state in 1909, at a cost of \$50,000. A \$7500 clay laboratory was added in 1911. This building is named in honor of Erasmus Haworth, professor of geology.

Liberal Arts Building. The east wing of the College of Liberal Arts and Sciences and Administration Building was erected in 1911 by the state, at a cost of \$125,000. It is occupied by the Departments of Economics, History and Political Science, Mathematics, Philosophy, and Sociology; the psychological laboratories occupy the basement, and the Department of Drawing and Painting the third floor.

The Dispensary Building at Rosedale was erected in 1915, at a cost of \$25,000 provided by the legislature.

Oread Training School was erected in 1915, at a cost of \$6000. This sum was largely a gift of the School.

The Vivarium was built in 1916 from the fund for permanent repairs and improvements.

UNIVERSITY ORGANIZATIONS.

GENERAL.

The Alumni Association is composed of all persons holding degrees granted by the University, though active membership is limited to those who pay annual dues. An endowment membership is maintained for those who subscribe to the endowment fund. An associate membership is for such former students of the University, not graduates, as pay the associate membership dues. Such former students may also become associate-endowment members. The control of the affairs of the association is in the hands of a board of ten directors. A general secretary is employed, whose office is at the University and who has charge of the publications of the association, and keeps, so far as possible, a complete record of facts concerning the alumni. The secretary is editor of the *Graduate Magazine*, which is sent monthly to all members of the association. The regular meetings of the association occur during commencement week of each year.

University Women's Association. The University Women's Association is composed of the women connected with the University as instructors, librarians, or officials, and the wives of instructors. This organization gives a general reception at the opening of each academic year, maintains a scholarship for women, and in various other ways shows its practical interest in the affairs of the University.

RELIGIOUS.

Young Men's Christian Association. This organization has a membership of over five hundred. The various activities of the association are carried on by the members themselves, under a board of directors and a general secretary whose entire time is devoted to the work.

In coöperation with the churches of Lawrence and the Christian and Presbyterian Bible chairs, the association offers a large number of Bible-study courses, under the leadership of University professors and advanced students. Courses in the study of missions are also given. The association is largely responsible for the support of its former general secretary, Mr. H. C. Herman, who is now engaged in association work in India.

Through the courtesy of the University Bible chair of the Christian Women's Board of Missions, the association occupies quarters in Myers Hall.

The association welcomes students at the opening of the University, aiding them in finding suitable rooming and boarding places. The employment bureau, which is conducted jointly by the association and the University, renders all assistance possible to students desiring to earn

a part of their expenses. During the summer months the employment bureau makes a canvass of the student district for rooms, and its information as to rooms and board is most complete. The association issues a student's handbook, giving valuable information to prospective students, which is ready for distribution about September 1, and will be sent free upon request. Address all correspondence to the general secretary.

Young Women's Christian Association. This is an organization of 500 University women, with a permanent sustaining membership of over 100 faculty women and alumnæ. The association employs a general secretary. The purpose of the association is fivefold: (1) to develop and deepen the spiritual and moral life of the young women of the University, and to bring to them the conception that no part of their life lies outside of their religion; (2) to be the medium between the women students of the University and the churches of Lawrence; (3) to give practical aid to women students whenever they are in need of it; (4) to be one of the agencies to create the best social standards; (5) to train young women to become efficient workers in church and philanthropic organizations.

Religious services are held weekly, on Tuesday afternoons, at 4:30, in Myers Hall. During the opening week of the fall term members of the association assist Freshman girls in registering and finding classrooms and rooming and boarding places.

Information concerning rooming and boarding places and employment for girls may be obtained by applying to the general secretary.

The Christian Church Bible Chair. April 1, 1901, the Women's Board of Missions of the Christian Church established a chair of Biblical instruction. Myers Hall, erected at a cost of \$40,000, affords commodious lecture rooms and offices, an assembly room seating five hundred, a library and museum of missions.

There is no organic relation between the Bible chair and the University. The privileges are offered to all students, and the instruction is nonsectarian. The purpose of the work is to give students a more intimate acquaintance with the Bible, and to render them assistance in their religious life.

The courses include studies in both the Old and New Testaments, in the history of missions, and in the great religions of the world.

A library of 1500 volumes on Bible study, missions, religion, Christian sociology, the Sunday school, and related subjects, is accessible to all.

The present occupant of the chair is Arthur Braden, A. B. (Hiram College), graduate of Auburn, N. Y., Theological Seminary, Ph. D. (Syracuse University).

Westminster Association. In 1905 the Presbyterians of Kansas organized Westminster Association for the purpose of offering Biblical instruction to all students and affording pastoral care for Presbyterian students of the University. On October 7, 1910, Westminster Hall, the gift of W. W. Cockins, of Lawrence, was dedicated. The hall is well adapted to class work, and also affords a center for the social life of the students. In June, 1911, Rev. Stanton Olinger, B. D. (Princeton), Ph. D. (Kansas), was elected principal. Mrs. Olinger is associated with him in the work of the hall.

The following courses are offered: A four-year course in Bible History; the Bible and Modern Science; the Lives and Doctrines of the Prophets; Pauline Theology; Missions and World Problems; Comparative Religions; the Sources of the Bible; and the Evidences of Christianity.

There is no organic connection with the University. The teaching is nonsectarian and without charge. All students are welcome to the social life of the hall.

All correspondence relative to the work of the Westminster Association should be addressed to the Principal.

City Churches. The churches of Lawrence unite in extending to the University students a cordial invitation to enter with them into Christian fellowship, and endeavor to make them feel that, irrespective of church membership, they are welcome to all the privileges which the church affords. To this end the various churches hold receptions for the students at the beginning of each year, the pastors preach special sermons from time to time, and the young people's societies arrange for social gatherings, to which students especially are invited. There are also organized, in the principal Sunday schools of the city, classes for University students, a number of these classes being in charge of University professors.

The First Baptist Church and the First Methodist Church have regularly appointed associate pastors, who give their main attention to the students of these denominations. Several other churches appoint students each year to act as assistants to the local pastors.

By these means the students are brought into close contact with the religious life of Lawrence. A religious census of the student body during the past few years shows that an average of eighty-seven per cent of the students have religious preferences, sixty-three per cent are church members, and that a large number are actively engaged in the work of the various churches and organizations connected therewith throughout the city.

LITERARY.

The Phi Beta Kappa Society. The Kansas Alpha chapter of this society was organized in 1890. The object of the society is, primarily, the promotion of scholarship in the University. To this end, a portion of the members of the graduating class of the College, never to exceed one-sixth, who have made high records of scholarship in their University studies, are elected to membership.

German Club. The membership of this club, which meets once in two weeks, consists of such students as have made sufficient progress in German to take active part in the programs. The object of the club is to furnish the student special opportunity to familiarize himself with the spoken language, and to promote an interest in all that is German. Musical, literary, and dramatic programs are rendered by the students. There are also talks and lectures by members of the faculty and outside speakers. The meetings are conducted exclusively in German. Each year a German play is given by students of the department.

The Quill Club is the parent chapter of an intercollegiate organization of students and instructors especially interested in literary activities and literary criticism. Applicants for membership must submit manuscript for the approval of the club.

The English Club is composed of the instructors and advanced students in the Department of English and meets bimonthly.

The French Club. The instructors and students in the French Department compose the Cercle Français, which meets once a week to present a brief literary program, reviews of articles in the leading French magazines, and reports on French topics. French only is used, as one of the chief objects of the club is to provide better opportunities than can be offered in the classroom for the practice of the spoken language. Another opportunity for such practice is found in the French play, given towards the close of each year.

The Greek Symposium consists of the instructors and students of the Greek Department, who meet once a month for the reading of papers and discussion of topics which are either too general or too special for class work. The meetings are held in the evening, at the home of one of the instructors, and the special program is followed by a social hour.

The Spanish Club. The Ateneo has been formed on the same general lines as the French Club for those students who wish to acquire facility in the use of spoken Spanish. At its weekly meetings, besides programs of a literary character, news of the Spanish-speaking world is reported and discussed. The Spanish play gives further opportunity to acquire readiness in speaking.

SCIENTIFIC.

The Sigma Xi Society. The Iota chapter of this honorary scientific society was established at the University in 1890. The society confers the honor of election to membership upon instructors and students who have shown special aptitude along scientific lines, especially with regard to research work. This chapter holds monthly meetings for the reading and discussion of scientific papers, and is the center of scientific interests at the University.

The Chemical Club is composed of the instructors and advanced students in the Department of Chemistry, and Chemical Engineers. Weekly meetings are held, and the programs include reports on research work by instructors and students, reports on scientific meetings and associations, reviews of new books and important articles in chemical journals, and notices of important inventions and new chemical processes.

Civil Engineering Society. This is maintained by students, under the guidance of the instructors in the department. It holds monthly meetings and is frequently addressed by practicing engineers, besides maintaining a program of papers and discussions.

University of Kansas Branch of the American Institute of Electrical Engineers. This is composed of instructors and students who are associated members or student members of the national organization. It holds biweekly meetings for the discussion of papers presented before the na-

tional meetings of the association, for the review of current literature, and for addresses by practicing engineers.

University of Kansas Student Section of the American Society of Mechanical Engineers. This is essentially a student organization, under the supervision of an instructor who is a member of the national society. Weekly meetings are held for reports on current engineering literature, with occasional addresses by practicing engineers.

Affiliated Students' Society of the American Institute of Mining Engineers. This is a society composed of Junior and Senior students and instructors in the department, which enjoys the advantage of association with the institute. Meetings are held monthly for the discussion of the publications of the institute and the presentation of papers. Weekly department meetings in Mining Journal supplement the work of the society.

The Botany Club is composed of instructors and students of the department of botany. It meets twice a month.

The Snow Zoology Club is composed of instructors and advanced students of the department. It meets twice a month for the study and discussion of questions of general interest to the members, the aim being more particularly to keep in touch with recent discoveries.

The Mathematical Club is an organization of advanced students of the Department of Mathematics, with one faculty member elected by them as their official adviser. It meets twice a month to discuss mathematical questions of general interest.

The Entomology Club is composed of instructors and advanced students of the Department of Entomology. The meetings are held weekly, and are devoted to the presentation of researches conducted by the department and to current advances as presented through the entomological journals. Elections to membership are based on general University scholarship and special proficiency in entomology.

The Home Economics Club meets once a month. Its membership is elective.

The Geology Club is composed of mining students and such College students as specialize in geology. It meets once in two weeks.

The Jurisprudence Club meets every three weeks for the discussion of general questions of current interest. Its membership is elective.

The Graduate Club meets once a month. Its interests are social, literary, and scientific. Its aim is to allow graduate students to become acquainted with each other and with each other's work.

The Pharmaceutical Society holds bimonthly meetings for the study of subjects especially related to the art of pharmacy, and for friendly intercourse. Its membership is drawn from students, faculty, and alumni of the School of Pharmacy.

DEBATING.

Debating Council. The Debating Council is made up of six members of the faculty, appointed by the Chancellor of the University, and two representatives from each of the two debating societies and the honorary

debating fraternity. The Council has general supervision over all preliminary and interstate debates.

DRAMATIC.

Dramatic Club. The students of the University maintain a dramatic club for the study and presentation of modern plays. Membership in the club is open to all students and is secured by try-outs held at stated intervals.

MUSICAL.

Orchestra. The University supports an orchestra of forty instruments, under the direction of one of the faculty of the School of Fine Arts. The Orchestra makes a study of the orchestral masterpieces, furnishes music for University events, and gives two concerts annually.

Women's Glee Club. The Women's Glee Club is under the direction of the head of the Department of Voice Training. Membership is competitive. An annual concert is given.

Men's Glee Club. The Men's Glee Club is under the direction of the head of the Department of Voice Training of the School of Fine Arts. The general control of the club, as to financial obligations and tours, is in the hands of a committee of the University Senate.

Band. The University Band is a permanent organization, fully uniformed, and directed by a professional leader. The band furnishes music for the more important University gatherings and gives several concerts annually.

PUBLIC OCCASIONS.

Convocation. At the opening of the fall semester, and semimonthly during the year, convocations of the faculty and student body are held. At these gatherings speakers, either from the faculty or from abroad, discuss topics of general interest. The purpose of these meetings is to bring together all members of the University for instruction as well as for the development of a common spirit.

Vesper Services. Religious exercises are held occasionally at 4:30 Sunday afternoons. They are in charge of the Y. M. C. A. and the Y. W. C. A. The service is largely musical, though an address is often given.

University Lectures. Whenever circumstances make them available, men of recognized standing in any field of science or art are secured to give addresses at the University. About ten such addresses are given yearly.

Thursday Afternoon College Faculty Lectures. On the third Thursday of every month at half past four a lecture is given in the University chapel by a member of the College faculty.

University Concerts. The University supports a course of eight concerts given by artists and organizations of the highest standing.

GENERAL INFORMATION.

ADMISSION.

The requirements for admission of graduates of Kansas high schools to the various schools of the University have been fixed by legislative enactment, which, by section 9, senate bill No. 66, session of 1915, provides that:

"Any person who shall complete a four-year course of study in any high school accredited by the State Board of Education shall be entitled to admission to the Freshman class of the State University, the State Agricultural College, or any of the State Normal Schools, on presenting a statement containing a transcript of his high-school record, signed by the principal of the school, and certifying that such person has satisfactorily completed said course of study."

For the guidance of prospective students who do not come under the provisions of the law, and who desire to prepare themselves for admission to any of the schools of the University, statements of entrance requirements will be found in the special sections of the catalog pertaining to those schools.

Entrance Examinations.

Candidates for admission who are not graduates of accredited Kansas high schools may offer themselves for examination in subjects required for admission.

Examination for such candidates will be held as follows:

Monday, May 28, or Monday, September 17.

8:30-10:30	Agriculture.
10:30-12:30	Physics.
1:30- 3:30	Latin.
3:30- 5:30	Commercial Geography.

Tuesday, May 29, or Tuesday, September 18.

8:30-10:30	English.
10:30-12:30	Algebra.
1:30- 3:30	Geometry.
3:30- 5:30	Civics.

Thursday, May 31, or Wednesday, September 19.

8:30-10:30	Physical Geography.
10:30-12:30	German.
1:30- 3:30	History.
3:30- 5:30	Economics.

Friday, June 1, or Thursday, September 20.

8:30-10:30	Romance Languages.
10:30-12:30	School Methods and Management.
1:30- 3:30	Physiology.
3:30- 5:30	Psychology.

Times for examinations in subjects not given in the above list may be arranged with the committee on examinations (room 202, Blake Hall), but will be set during the above days.

Entrance examinations may be taken also during the week of mid-year examinations.

Candidates for admission may divide the examination between two years, or between the two examinations of the same year, under the following conditions: The applicant may present himself at the preliminary for examination in any or all of the prescribed subjects, and if he is successful in five or more subjects he need not be again examined in them.

Admission of Special Students.

Special students are admitted to the various schools of the University upon conditions prescribed by the faculties.

Admission to Advanced Standing.

The regulations governing admission to advanced standing in the schools of the University are administered by a committee of the University Senate, which examines into the merits of each case presented to it, and either credits the applicant with a certain rank or recommends him to the heads of departments for advanced credit or examination.

Application for advanced standing should be made as early as possible. Students who expect to present credits for advanced standing will save much time and annoyance for themselves if they will forward their credentials as early as possible to the secretary of the Advanced Standing Committee. These credentials must include official transcripts of preparatory school records and college records, and a certificate of honorable dismissal from the college or university attended. These credentials should be sent to the secretary shortly after the end of the spring semester if the applicant intends to enter the University in the fall. They should be sent, at the very latest, three weeks before the opening of the University in the fall. The Advanced Standing Committee can furnish no estimate of advanced standing credit to prospective students unless the credentials indicated above are sent to the committee. The committee can not consider applications for advanced standing which are made later than thirty days after matriculation.

If the applicant for advanced standing should be required to take an examination in any subject which he presents for advanced standing credit, this examination must be taken not later than the sixth week of his first semester in the University.

No advanced standing credit will be given for work done during a four-year course of study in a high school, academy, or preparatory school.

The maximum advanced standing credit for work done in a junior college is sixty hours. *In no case will work done in a junior college be credited as work of the Junior or Senior years in the University.*

Advanced standing credit is entirely provisional and may be withdrawn in whole or in part if the subsequent record of the student in

the University shows that his scholarship and attainments do not justify the credits given at the time of his entrance. This provisional advanced standing rating will not become permanent nor be entered upon the books of the University until the student, by the successful completion of a year's work, has satisfied the Dean of the school concerned that his rating is justified.

All inquiries and correspondence concerning advanced standing should be addressed to E. W. Murray, secretary Advanced Standing Committee, University of Kansas.

REGISTRATION.

All candidates for admission having certificates from accredited schools and all students of the University intending to pursue their studies during the ensuing year must present themselves for registration at the University on September 17, 18, 19, 1917. *Registration at a later date will be permitted only on the payment of a fee of one dollar.*

ENROLLMENT.

After registration has been completed with the Registrar and fees have been paid, students should apply to the Dean of the school to which they desire admission for enrollment in their classes. Enrollment the first semester occurs September 18, 19, 1917, and on the last day of the second semester. *Enrollment at a later date will be permitted only on the payment of a fee of one dollar.*

EXAMINATIONS AND REPORTS.

Final Examinations are held for all students during the last week of each semester.

Special Examinations will be given only during examination weeks and during the opening week of the fall semester. All requests for special examinations must be approved by the Dean.

Dismissal. Absence from examination or failure in more than one-third of his work in any one semester severs a student's connection with the University.

Withdrawals. A student may be withdrawn from a class by the Dean, with the consent of his instructor. Honorable withdrawals will be permitted only when the student's work in the subject is of passing grade.

Whenever a student is failing in part of his work the Dean may, at his discretion, withdraw him from one or more of the classes in which he is failing and give him a failure in such subjects.

Not Examined. A student who fails to appear for final examination, but whose class standing has been of passing grade, will be reported as "not examined." If his class standing is below passing he will be reported as "failed."

Grade One is used to indicate that the work of the student has been excellent in quality and performed with marked fidelity and decided interest.

Grade Two is used to indicate that the work of the student has been good and his application reasonable.

Grade Three is used to indicate that the work of the student has been fair and that his attainments are at least sufficient to prepare him to pursue the succeeding subjects in the department or subjects in other departments in any way dependent upon the subject graded.

By recent action of the Senate it has been determined: (1) That the letters A, B, C, D shall be employed to indicate the four passing grades; (2) that the letters I and F shall be employed to indicate "incomplete work" and "failure"; (3) That the new system shall be put in effect the first of the school year 1917-'18.

Conditions. A student may be conditioned in a subject if the quality of his work has been of passing grade and some portion of the work is for good reason unfinished. A condition may be made good under the direction of the instructor and removed by special examination, but unless properly removed before the beginning of the same semester of the following year the condition becomes a failure and the student must reënroll for the subject.

Failures. Any student who has not met the requirements for at least a grade three or "condition" must be marked as "not examined" or "failed." A failure may be removed only by reënrollment in the subject.

Inadequate Preparation. When students show by their current work insufficient entrance preparation in any study they may be required to make good such deficiency in any manner prescribed by their instructors.

EXPENSES OF STUDENTS.

Fees.

Students are required to pay fees as scheduled below. In all cases, the matriculation fee is paid but once—at the time the student first registers in any school of the University. The incidental fee is payable in full each year at registration.

COLLEGE OF LIBERAL ARTS AND SCIENCES.

Matriculation fee, for residents of the state	\$5.00
for nonresidents	10.00
Incidental fee, for residents of the state	10.00
for nonresidents	20.00
Diploma fee, at graduation	5.00

SCHOOL OF ENGINEERING.

Matriculation fee, for residents of the state	\$5.00
for nonresidents	10.00
Incidental fee, for residents of the state	10.00
for nonresidents	20.00
Diploma fee, at graduation	5.00

SCHOOL OF LAW.

Matriculation fee, for residents of the state	\$5.00
for nonresidents	10.00
Incidental fee, for residents of the state	25.00
for nonresidents	35.00
Diploma fee, at graduation	5.00

SCHOOL OF PHARMACY.

Matriculation fee, for residents of the state	\$5.00
for nonresidents	10.00
Incidental fee, for residents of the state	25.00
for nonresidents	35.00
Diploma fee, at graduation	5.00

Students taking the regular four years in pharmacy are registered during the first two years in both the School of Pharmacy and the College of Liberal Arts and Sciences, and may pay the College incidental fee so long as their work is confined to courses offered in the College.

SCHOOL OF MEDICINE.

Matriculation fee, for residents of the state	\$5.00
for nonresidents	10.00
Incidental fee, for residents of the state	25.00
for nonresidents	35.00
Diploma fee, at graduation	5.00

(For special fees for clinical work, see section VIII.)

During the first year of the regular four years in medicine students are registered in both the School of Medicine and the College of Liberal Arts and Sciences, and will pay the College incidental fee. During the succeeding years they will pay the incidental fee of the School of Medicine.

SCHOOL OF FINE ARTS.

Matriculation fee, for residents of the state	\$5.00
for nonresidents	10.00
Diploma fee, at graduation	5.00

(Special fees for fine arts students are given in detail in section V, School of Fine Arts.)

GRADUATE SCHOOL.

Matriculation fee, for residents of the state	\$5.00
for nonresidents	20.00
Incidental fee, for residents of the state	10.00
for nonresidents	20.00
Diploma fee, for each degree	5.00

SUMMER SESSION.

Incidental fee, for residents of the state	\$10.00
for nonresidents	15.00

SCHOOL OF EDUCATION.

Matriculation fee, for residents of the state	\$5.00
for nonresidents	10.00
Incidental fee, for residents of the state	10.00
for nonresidents	20.00
Diploma fee, at graduation	5.00

CORRESPONDENCE DEPARTMENT.

Incidental fee, for residents of the state, any school ...	\$10.00
for nonresidents of the state, any school,	15.00

A fee of \$1 per semester is required of each student to cover the expense of maintaining the general health of the University body.

Late registration and late enrollment in class also require a fee of \$1.

Announcements of laboratory and shop fees will be found under such courses as require them.

Living Expenses.

Information concerning the location of rooming and boarding places may be had at the office of the Registrar, or from the secretary of the University Y. M. C. A.

The average price of board, rooms, light, and fuel may be placed at from \$4 to \$7 a week. Day board in private families and at city restaurants may be obtained for \$3.50 to \$5 a week. Day board in clubs varies from \$3.50 to \$4 a week. Furnished rooms, usually occupied by two students, range from \$4 to \$15 a month. Unfurnished rooms rent for \$1.50 to \$3 a month. Students who can supply their own furniture and buy and prepare provisions for the table can lessen expenses materially.

The following table shows the estimated expenses of a student of the University for a year, excluding clothing and traveling expenses; the expense varies with the course pursued, and also depends, naturally, upon the tastes and habits of the student:

Board	\$160.00 to \$180.00
Room	20.00 to 60.00
Books and stationery	8.00 to 40.00
Laundry	8.00 to 30.00
Matriculation and other fees	15.00 to 30.00
Incidentals	15.00 to 50.00

Totals	\$226.00 to \$410.00
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The estimated expenses for students in the Medical, Law and Pharmacy schools of the University are included in the second table because of the higher incidental fee.

PRIZES AND AIDS.

The William J. Bryan Prize is derived from the income of \$250 which was presented to the University by Mr. Bryan in 1898, upon the condition that the proceeds should be used for "a prize for the best essay discussing the principles which underlie our form of government." The prize is offered in alternate years. The details of the contest are intrusted by the faculty of the College to a special committee. Awarded in 1916 to Lenora Miesse, a Sophomore in the College.

The Hattie Elizabeth Lewis Memorial Prizes were established in 1911, in memory of Hattie Elizabeth Lewis, a former student of the University. They are open to all students of the University, and have since 1911 been given annually for the best essays on some phase of the general theme, "The Application of the Teachings of Jesus to the Practical Affairs and Relations of Life." They have amounted to \$250 annually. Awards in 1916: First to Ralph W. Nelson, a Graduate student; second to James A. Scott, a Freshman in the College; third to George H. Marshall, a Freshman in the College; fourth to Venetta Hosford, a Senior in the College.

University Fellowships to the number of seventeen have been established for graduates of the University of Kansas and of other recognized colleges and universities who have distinguished themselves for scholarship. These fellowships are of \$280 each.

University Fellowships for Graduates of Kansas Colleges, ten in number, are offered yearly. These fellowships also amount to \$280 each, and one is offered to each of ten Kansas colleges chosen from year to year by the administrative committee of the Graduate School.

The Charles S. Griffin Memorial Scholarship was established in 1910 by Mrs. Mary Griffin, in memory of her son. The interest on \$1000 is awarded annually to a student of the College. Held in 1916-'17 by Annie Victoria Benson.

The Marcella Howland Memorial Scholarship of ninety dollars was established in 1900, by Mrs. Marcia Brown Howland, in memory of her daughter. It is open to young women of the Junior and Senior classes in the College. Held in 1916-'17 by Anna E. Forsythe.

The Frances Schlegel Carruth Scholarship in German was established in 1909, in memory of Frances Schlegel Carruth. It is a Freshman scholarship of one hundred dollars, awarded to the graduate of the Lawrence high school who passes the best examination in two years' entrance German. Held in 1916-'17 by Lucy Hackman.

The Women's Student Government Association Scholarship of one hundred dollars, was established in 1910. It is open to young women of the Freshman class for use in the Sophomore year. Held in 1916-'17 by Lucile Haines.

The University Women's Association Scholarship of one hundred dollars, was established in 1915. Held in 1916-'17 by Ruth Dring.

The Eliza Matheson Innes Memorial Scholarship of one hundred dollars, was established in 1911, by Mr. George Innes, in honor of his wife. It is open to women students of the College above the Freshman year, or to women students of the Graduate School. Held in 1916-'17 by Osee Hughes.

The Caroline Mumford Winston Memorial Scholarship of thirty-five dollars, was established in 1912, by Mr. Thomas Winston, in memory of his wife. It is open to women students of the College above the Freshman year, or to women students of the Graduate School. Held in 1916-'17 by Ashley Hawkins.

The Kansas Branch of the Association of Collegiate Alumnae established a scholarship of fifty dollars in 1912. It is open to women students of the College above the Freshman year, or to women students of the Graduate School. Held in 1916-'17 by Mina Upton.

The Kansas City Branch of the Association of Collegiate Alumnae established in 1914 two scholarships. These are loans of seventy-five dollars each for five years without interest. Open to Junior or Senior women students from Kansas City, Kansas or Missouri. Held in 1916-'17 by Inez MacKinnon and Lottie G. Martin.

The Lucinda Smith Buchan Memorial Scholarship was established in 1900 in memory of Lucinda Smith, A. B., 1890, by the alumnae members of the Pi Beta Phi Sorority. It is a loan of two hundred dollars for two years without interest, open to the young women of the Junior and Senior classes in the College. Held in 1916-'17 by Dorothy Bigelow.

The Mrs. J. B. Watkins Scholarship of fifty dollars was established in 1915. It is awarded to a young woman of the Freshman class. Held in 1915-'16 by Frances Auswald.

The Doctor G. W. Maser Memorial Scholarship was established in 1916 by Mrs. Pearl Maser Jontz in memory of her father. Held in 1915-'16 by Ruth Guild.

Governor Arthur Capper has given a scholarship in the sum of fifty dollars. It is open to Freshman students in the School of Fine Arts. Held in 1916-'17 by Leta Ellison.

Mrs. A. C. Stich, of Independence, has given a scholarship in the sum of fifty dollars. It is open to Freshman students in the School of Fine Arts. Held in 1916-'17 by Adrian Pouliot.

The Daughters of the American Revolution Scholarship was established in 1912 by the Betty Washington Chapter of the Daughters of the American Revolution. It is a loan of one hundred dollars without interest for three years after graduation, and open to young women of the Senior class. Held in 1916-'17 by Maria Deibel.

The Student Loan Fund was established in July, 1894, by the graduating classes in College and Engineering of that year. It has increased through donations from subsequent classes and from private individuals until it amounts to about \$3000. By the terms of the gift sums not to exceed \$100 may be loaned on bankable notes at four per cent interest to students of the College and School of Engineering.

The James L. Mead Loan Fund of \$1000 is held in trust on the same terms as those under which the student loan fund is operated.

An Aid Fund has been established for the assistance of worthy women students.

Employment. The University, through the Young Men's and the Young Women's Christian Associations, maintains an employment bureau. The secretaries of these associations may be addressed by students desiring employment.

ROOMING HOUSES.

Approved Rooming Houses for Men. Lists may be had from the Registrar, or the Secretary of the University Y. M. C. A., on application.

Approved Rooming Houses for Women. The University attempts to secure the best housing conditions available for its women students, through a committee under whose direction a list of rooming houses for women is prepared each year. The sanitary and social conditions of each house are investigated before it is placed on the approved list. Students are expected to room only in houses that are on this list. This list, together with regulations governing rooming places, may be had from the Registrar from July 1 to September 10, and thereafter from the Adviser of Women. By action of the Board of Administration, occupancy of rooms by women students shall be subject at all times to the approval of the Adviser of Women; further, women students are not permitted to lodge in houses in which men also lodge, unless for special reasons the rule is waived by the Adviser. The University expects students to keep their

rooms for at least one semester or to make changes only on recommendation of the Adviser.

House Customs. The following customs have been adopted by the women of the University as organized in the Women's Student Government Association:

I. Rooming houses for women should be closed not later than 10:00 p. m. every night in the week, except when entertainments of general interest are held, and on Friday and Saturday nights, when the closing hour is 11:00.

II. Students' parties should be held only on Friday or Saturday nights, or on nights preceding holidays, and on holidays.

III. Social engagements should not be made for the evenings of school days, except for Friday evenings, or for evenings preceding holidays, and on holidays.

Mrs. Eustace H. Brown, Adviser of Women of the University, exercises general supervision over all houses where women live, and gives general and individual attention to the needs of women students. She invites correspondence with parents and guardians, and gladly coöperates with them regarding the welfare of women students.

STUDENT HEALTH.

The University Health Service is organized for the purpose of teaching the students the importance of maintaining health and of living in sanitary surroundings. To accomplish this work a committee composed of five faculty members conducts the operations of the service along the lines of education, sanitation, and personal supervision.

The educational work is conducted by means of lectures concerning both personal hygiene and sanitation, which are delivered by experts on the various phases of these subjects.

Sanitation is maintained by a carefully worked out plan of examination, inspection, and supervision.

The University Hospital is maintained by a fee of two dollars yearly from each student. To assist in the work of the hospital there are two auxiliary dispensaries in the gymnasium. There is also an isolation hospital where all dangerously transmittable diseases are taken. Difficult or dangerous operations are taken to the Rosedale hospital.

SECTION II
Graduate School

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FACULTY.

- FRANK STRONG, Ph. D., Chancellor of the University, and President of the Faculty.
- FRANK W. BLACKMAR, Ph. D., Dean of the Graduate School, and Professor of Sociology.
- JAMES W. GREEN, A. M., Professor of Law.
- EDGAR H. S. BAILEY, Ph. D., Professor of Chemistry and Metallurgy.
- ALEXANDER M. WILCOX, Ph. D., Professor of Greek Language and Literature.
- LUCIUS E. SAYRE, Ph. M., Professor of Pharmacy.
- CHARLES G. DUNLAP, Litt. D., Professor of English Literature.
- CARL A. PREYER, Mus. D., Professor of Piano and Composition.
- OLIN TEMPLIN, A. M., Professor of Philosophy.
- EDWIN M. HOPKINS, Ph. D., Professor of Rhetoric and English Language.
- FRANK H. HODDER, Ph. M., Professor of American History and Political Science.
- ERASMUS HAWORTH, Ph. D., Professor of Geology and Mineralogy.
- ARTHUR T. WALKER, Ph. D., Professor of Latin Language and Literature.
- WILLIAM C. STEVENS, M. S., Professor of Botany.
- ARVIN S. OLIN, LL. D., Professor of Education.
- WILLIAM A. GRIFFITH, Professor of Drawing and Painting.
- EUGENIE GALLOO, A. M., Professor of Romance Languages and Literatures.
- WILLIAM L. BURDICK, Ph. D., Professor of Law.
- CHARLES S. SKILTON, A. B., Professor of Organ, Theory of Music, and Music History.
- IDA H. HYDE, Ph. D., Professor of Physiology.
- WILLIAM H. JOHNSON, A. M., Professor of Education.
- SAMUEL J. HUNTER, A. M., Professor of Entomology.
- WILLIAM E. HIGGINS,* LL. B., Professor of Law.
- PERLEY F. WALKER, M. M. E., Professor of Mechanical Engineering.
- MERVIN T. SUDLER, M. D., Professor of Surgery.
- L. D. HAVENHILL, Ph. M., Professor of Pharmacy.
- FREDERICK E. KESTER, Ph. D., Professor of Physics.
- GEORGE C. SHADD, E. E., Professor of Electrical Engineering.
- HAMILTON P. CADY, Ph. D., Professor of Chemistry.
- MERLE THORPE,* A. B., Professor of Journalism.
- JOHN SUNDWALL, M. D., Professor of Anatomy.
- FREDERICK H. BILLINGS, Ph. D., Professor of Bacteriology.
- HERBERT A. RICE, C. E., Professor of Mechanics and Structural Engineering.
- BENNET M. ALLEN, Ph. D., Professor of Zoölogy.

*Absent on leave, 1916-'17.

- EDMUND H. HOLLANDS, Ph. D., Professor of Philosophy.
 HENRY W. HUMBLE, J. D., Professor of Law.
 EDWARD D. OSBORN, Professor of Law.
 SAMUEL A. MATTHEWS, M. D., Professor of Physiology and Experimental Pharmacology.
 FRANK B. DAINS, Ph. D., Professor of Chemistry.
 CLEMENT C. WILLIAMS, C. E., Professor of Railway Engineering.
 ELMER F. ENGEL, A. M., Professor of German.
 JOHN N. VAN DER VRIES, Ph. D., Professor of Mathematics.
 RALPH H. MAJOR, M. D., Professor of Bacteriology and Pathology.
 WILLIAM B. DOWNING, Professor of Voice and Public-school Music.
 ELIZARETH C. SPRAGUE, Professor of Home Economics.
 RAPHAEL D. O'LEARY, A. B., Professor of Rhetoric.
 RAYMOND A. SCHWEGLER, A. M., Professor of Education.
 ARTHUR J. BOYNTON, A. M., Professor of Economics.
 CHARLES H. ASHTON, Ph. D., Professor of Mathematics.
 ARTHUR C. TERRILL, A. M., Professor of Mining.
 HAROLD L. BUTLER, A. B., Professor of Voice.
 ARTHUR NEVIN, Professor of Ensemble and Music Extension.
 HARRY C. THURNAU, Ph. D., Professor of German.
 FREDERICK J. KELLY, Ph. D., Professor of Education.
 RAYMOND A. KENT, A. M., Professor of Education.
 DAVID L. PATTERSON, B. S., Professor of European History.
 WILLIAM A. WHITAKER, A. M., Professor of Metallurgy.
 LEON N. FLINT, A. B., Professor of Journalism.
 FREDERICK H. SIBLEY, M. E., Professor of Mechanical Engineering.
 GEORGE E. COGHILL, Ph. D., Professor of Anatomy.
 OLE O. STOLAND, Ph. D., Professor of Physiology.
 WALTER S. HUNTER, Ph. D., Professor of Psychology.
 WILLIAM M. HEKKING, B. P., Professor of Drawing and Painting.
 MILES W. STERLING, A. M., Associate Professor of Greek.
 HANNAH OLIVER, A. M., Associate Professor of Latin.
 SELDEN L. WHITCOMB, A. M., Associate Professor of English Literature.
 MARTIN E. RICE, M. S., Associate Professor of Physics.
 LOUIS E. SISSON, A. M., Associate Professor of Rhetoric.
 CLARENCE A. DYKSTRA, A. B., Associate Professor of History.
 ALBERTA L. CORBIN, Ph. D., Associate Professor of German.
 WILLIAM J. BAUMGARTNER, A. M., Associate Professor of Zoölogy.
 HENRY O. KRUSE, A. M., Associate Professor of German.
 CLARENCE C. CRAWFORD, Ph. D., Associate Professor of History.
 EARL W. MURRAY, A. B., Associate Professor of Latin.
 WILLIAM S. JOHNSON, Ph. D., Associate Professor of English Literature.
 VICTOR E. HELLEBERG, A. B., Associate Professor of Sociology.
 MARGARET LYNN*, A. M., Associate Professor of English Literature.
 ELSIE NEUEN SCHWANDER, Ph. D., Associate Professor of Romance Languages.
 ARTHUR L. OWEN, A. M., Associate Professor of Romance Languages.
 HERMAN C. ALLEN, A. M., Associate Professor of Chemistry.

*Absent on leave, 1916-'17.

- WILLIAM W. DAVIS, Ph. D., Associate Professor of American History.
 C. FERDINAND NELSON,* Ph. D., Associate Professor of Physiological Chemistry.
 CHARLES A. SHULL, Ph. D., Associate Professor of Plant Physiology and Genetics.
 ULYSSES G. MITCHELL, Ph. D., Associate Professor of Mathematics.
 ALFRED H. SLUSS, B. S., Associate Professor of Mechanical Engineering.
 GEORGE E. PUTNAM, B. Litt., Associate Professor of Economics.
 FLOYD C. DOCKERAY, Ph. D., Associate Professor of Psychology.
 HERBERT W. NUTT, Ph. D., Associate Professor of Education.
 JOSEPH G. BRANDT, Ph. D., Associate Professor of Greek.
 NOBLE P. SHERWOOD, A. M., Associate Professor of Bacteriology.
 EDWIN F. STIMPSON, B. S., Assistant Professor of Physics.
 JAMES E. TODD, A. M., Assistant Professor of Geology and Mineralogy.
 ALBERT M. STURTEVANT, Ph. D., Assistant Professor of German.
 LULU GARDNER, A. B., Assistant Professor of Rhetoric.
 CLIFFORD C. YOUNG, A. B., Assistant Professor of Chemistry.
 ARTHUR MITCHELL, Ph. D., Assistant Professor of Philosophy.
 FREDERICK A. J. COWPER, A. M., Assistant Professor of Romance Languages.
 WILLIAM R. B. ROBERTSON, Ph. D., Assistant Professor of Zoölogy.
 THEODORE T. SMITH, A. M., Assistant Professor of Physics.
 HERBERT B. HUNGERFORD*, A. M., Assistant Professor of Entomology.
 PAUL V. FARAGHER, Ph. D., Assistant Professor of Chemistry.
 EDMUND D. CRESSMAN, Ph. D., Assistant Professor of Latin.
 MARK SKIDMORE, A. M., Assistant Professor of Romance Languages.
 RALPH E. CARTER, A. M., Assistant Professor of Education.
 WALTER S. LONG, A. M., Assistant Professor of Chemistry.
 NADINE NOWLIN, A. M., Assistant Professor of Zoölogy.
 HERMAN DOUTHITT, A. M., Assistant Professor of Zoölogy.
 GEORGE W. STRATTON, Ph. D., Assistant Professor of Chemistry.
 CHESTER A. BUCKNER,* A. M., Assistant Professor of Education.
 JOSEPH F. WELKER, M. of C. E., Assistant Professor of Civil Engineering.
 ELLIS B. STOUFFER, Ph. D., Assistant Professor of Mathematics.
 WILLIAM M. DUFFUS, A. M., Assistant Professor Economics.
 GRACE M. CHARLES, Ph. D., Assistant Professor of Botany.
 BENJAMIN J. CLAWSON,* A. M., Assistant Professor of Bacteriology.
 JACOB O. JONES, M. S., Assistant Professor of Hydraulics.
 BLAINE F. MOORE, Ph. D., Assistant Professor of Political Science.
 JOSEPHINE BURNHAM, Ph. D., Assistant Professor of English.
 FRANK E. MELVIN, Ph. D., Assistant Professor of European History.
 WILLIAM L. EIKENBERRY, B. S., Assistant Professor of the Teaching of Biological Sciences.
 FREDERICK W. BRUCKMILLER, A. M., Assistant Professor of Chemistry.
 AMIDA STANTON, A. M., Assistant Professor of Romance Languages.
 SOLOMON LEFSCHETZ, Ph. D., Assistant Professor of Mathematics.
 HARRY V. E. PALMBLAD, A. M., Assistant Professor of German.
 RICHARD LEONIDAS GRIDER, Assistant Professor of Mining Engineering.

*Absent on leave, 1916-17.

- MANUAL C. ELMER, Ph. D., Assistant Professor of Sociology.
 RAYMOND C. MOORE, Ph. D., Assistant Professor of Geology and Paleontology.
 WINTHROP P. HAYNES, Ph. D., Assistant Professor of Mineralogy and Petrology.
 JOHN ISE, Ph. D., Assistant Professor of Economics.
 ROBERT M. WOODBERRY, Ph. D., Assistant Professor of Economics.
 HARRY D. HARPER, A. B., Assistant Professor of Economics.
 IVAN P. PARKHURST, B. S., Instructor in Chemistry.
 CLARENCE ESTES, B. S., Analyst in Food Laboratory.
 WALTER B. BODENHAFFER, A. M., Instructor in Sociology.
 PETER A. F. APPELBOOM, Instructor in Romance Languages.
 JAY MILLIGAN, A. B., Instructor in Bacteriology.
 DONALD G. PATERSON, A. M., Instructor in Psychology.
 ARTHUR J. MIX, Ph. D., Instructor in Plant Pathology.
 KATE DAUM, A. M., Assistant Instructor in Home Economics.
 S. HERBERT HARE, Lecturer on Landscape and Garden Design.

ADMINISTRATIVE COMMITTEE.

FRANK W. BLACKMAR.

FRANK H. HODDER.

F. B. DAINS.

W. C. STEVENS.

H. C. THURNAU.

UNIVERSITY FELLOWS.

- HAL W. SHERMAN.—*Bacteriology*.
 NEVA RITTER.—*Botany*.
 HAROLD W. GREIDER.—*Chemistry*.
 ROY ROBERT IRVIN.—*Chemistry*.
 WILLIAM MAHLON JANNEY.—*Chemistry*.
 ALEXANDER K. RADER.—*Economics*.
 ARTHUR K. LOOMIS.—*Education*.
 FORREST NELSON ANDERSON.—*Entomology*.
 JAMES RALPH FOSTER.—*English*.
 LULU T. MCCANLES.—*English*.
 EDNA-PEARL OSBORNE.—*English*.
 *G. BAERG.—*German*.
 WILLIAM AYRES MCKINNEY.—*History*.
 JAMES C. MALIN.—*History*.
 FLORENCE EVELYN HALE.—*Latin*.
 ADA HELEN WEST.—*Mathematics*.
 WILLIAM ORLAND LYTLE.—*Physics*.
 JAMES HAURY.—*Romance Languages*.
 LEWIS ALLISON CURRY.—*Zoölogy*.

*Resigned.

FELLOWS FROM KANSAS COLLEGES.

- FREEMAN C. HAVIGHURST.—*Baker University.*
GEORGE HENRY LINDSTROM.—*Bethany College.*
G. AUSTIN DAVIS.—*College of Emporia.*
RALPH A. BRANCH.—*Fairmount College.*
RUTH DAVENPORT PAYNE.—*Friends University.*
JOSIAH B. HECKERT.—*Kansas Wesleyan College.*
GEORGE EARL WYNN.—*McPherson College.*
LOIS EMMA MARSH.—*Midland College.*
CLEO HAROLD KIDWELL.—*Ottawa University.*
HOWARD WHITE.—*Southwestern College.*
RAYMOND HAMILTON CARPENTER.—*Washburn College.*

The Graduate School.

The Graduate School was organized in 1896-'97, for the purpose of giving opportunity for students to pursue advanced work, and to encourage independent and scientific investigation. Courses of study for advanced degrees are offered in all of the schools of the University, nearly every department being represented. Through the Graduate School all the advanced degrees of the University are granted.

REQUIREMENTS FOR ADMISSION.

Admission to the Graduate School ordinarily is granted to graduates of this University holding the bachelor's degree, and to graduates of other colleges and universities of good standing on presentation of proper evidence of scholarship and testimonials of good character.

REGISTRATION.

Students wishing to register should first apply to the Dean of the Graduate School. When it is ascertained in what department the student desires to do his major work, the Dean will refer him to the head of that department, who will select the courses, after consultation with the student. The student will then submit the courses to the Dean, and if they are approved the applicant will be given a card permitting him to register in the office of the Registrar. Work to be counted as graduate work is specified in the Catalog, and must be designated as graduate on the enrollment card filed in the Registrar's office.

DEGREES GRANTED.

ACADEMIC DEGREES: Master of Arts, Master of Science, Doctor of Philosophy.

PROFESSIONAL DEGREES: Civil Engineer, Mechanical Engineer, Mining Engineer, Chemical Engineer, Electrical Engineer, Master of Science in Education.

The Requirements for the Degrees of Master of Arts and Master of Science.

When the candidate for the master's degree has selected the department in which his major work is to be done, the head of that department, in consultation with the candidate, approves his work for the master's degree, which may be confined to the department of the major study or may be selected from that and not more than two other departments. The decision of the head of the department is subject to the veto of the Dean of the Graduate School, but appeal may be made from the decision of the Dean to the Graduate Faculty. The head of the major department approves the courses selected for each semester on a card provided for the same, which is kept on file at the Dean's office. If the student subsequently changes his selection of a major department, the graduate work already done can not be counted toward the master's degree unless approved by the head of the new major department.

The master's degree will be granted only after at least one full year's graduate work. The candidate must have completed with high credit thirty hours of work chosen from the courses open to graduates, published in the catalog, or approved by the departments concerned and the

administrative committee. Courses for which a professional degree is given will not be counted toward this degree. Not more than sixteen hours' credit can be given in one term.

Ordinarily each candidate for the master's degree is required to present a thesis to the head of the major department. The thesis must embody the results of scholarly research on some topic connected with the candidate's major study. The thesis must be completed and given to the head of the department under whose direction it has been done, not later than May 15 preceding the June in which the candidate expects to receive his degree. After examining the thesis, the head of the department shall report its acceptance to the Registrar and deposit the thesis in the office of the Dean of the Graduate School. The thesis must be typewritten and bound in cloth. In special cases, where it seems advisable for the candidate to devote all of his time to regular class work, not involving research, on the recommendation of the head of the department and the consent of the Dean, the requirement of a thesis may be waived.

Ordinarily the candidate for the master's degree is expected to spend a minimum of one year in resident graduate work at some university, the latter half of which at least must be done in residence at the University of Kansas. These regulations permit the acceptance of graduate work done in other institutions to the extent of not more than half of the work, but all credits offered are subject to the approval of the administrative committee.

Engineering Degrees.

Graduates in engineering in this University, and masters of science who have received their degrees through the Graduate Faculty, having majored in engineering, are eligible to the professional degree of civil engineer, electrical engineer, mechanical engineer, mining engineer, or chemical engineer, whichever is appropriate to the undergraduate courses taken. Candidates for these degrees must have spent at least three years' actual time in professional practice, in positions of responsibility, in design, construction or operation of engineering works, and must furnish detailed and satisfactory evidence as to the nature and extent of this practice.

Each must submit an engineering thesis, accompanied by detailed explanations, drawings, specifications, estimates, etc., and embodying the results of their own work or observation. If approved, the thesis and all accompanying material become the property of the University.

All theses for professional degrees must be delivered to the Dean of the School of Engineering on or before the 15th day of May.

Doctor of Philosophy.

The degree of doctor of philosophy will be granted for advanced scholarship, and the performance of independent work in some special line, under the following conditions:

1. The candidate must be a baccalaureate graduate of some college or university of good standing; and he must give satisfactory evidence to the Faculty of the Graduate School that he possesses an adequate preparation for graduate work.

2. He must make application to the Dean of the Graduate School before the 1st day of October preceding the commencement at which he intends to present himself for the degree, and must then give satisfactory evidence of his ability to read such German and French as may be necessary for the proper prosecution of his studies.

3. He must have spent at least three full college years in resident graduate work at this or some other approved university the last year of which he must have spent as a resident student of this University. The time spent in attaining the degree of A. M. may be counted toward satisfying this time condition.

4. He must present a thesis showing the result of original research of a high character, and must pass acceptable examinations, both written and oral, in one chief or major study and two allied, subsidiary or minor studies, not more than two of which may be in the same department. The oral examination is given before the Faculty of the Graduate School, where the candidate may be required to defend his thesis. This thesis, embodying the results of original research in some subject connected with his major study, must be presented to the head of the department in which the work was done, not later than the 1st of May preceding the commencement at which the degree is to be conferred, and if approved by him it is placed on file for inspection in the office of the Dean of the Graduate School for at least two weeks. If the thesis is finally approved, the candidate must, before receiving the degree, deliver at least fifty printed copies of it to the Librarian of the University, or give proper security for the printing of that number; but if the thesis has already been printed, ten copies only need be deposited with the Librarian.

UNIVERSITY FELLOWSHIPS.

General Fellowships.

For the encouragement of advanced study and research, the University of Kansas has established seventeen fellowships for graduates of special merit. Each fellowship entitles the holder to \$280. Fellows are expected to devote their time to investigation and research leading to an advanced degree, except that they may be required to give not exceeding six hours of service per week in the department to which they are assigned. These fellowships are awarded to graduates of the University of Kansas, and of other colleges and universities of good standing, who have distinguished themselves for special scholarship and marked ability.

For the year 1917-'18 these fellowships may be awarded to the best qualified candidates applying in one of the departments enumerated below.

Applications for fellowships may be filed, on blanks provided, with the Dean of the Graduate School on or before the first day of March of the collegiate year preceding that during which the fellowship is desired. Such applications may be accompanied by recommendations of instructors and by specimens of original work of the applicants, either published or in manuscript.

The applications of the various candidates are referred to the administrative committee of the Graduate School, which acts as a fellowship committee in consultation with the heads of the departments in which fellowships are granted. The committee, after consideration of the relative merits of all applicants, nominates the successful candidates and recommends them to the Board of Administration for election. Fellows are elected for a term of one year. However, in special cases, they may be reelected for one additional year.

Fellowships for Graduates of Kansas Colleges.

In order to promote advanced study at the University of Kansas, and to encourage the graduates of Kansas colleges and universities to continue their work, the University of Kansas offers one fellowship of \$280 to each of eleven Kansas colleges. The colleges to which fellowships were granted for 1916-'17 were: Baker University, Bethany College, Emporia College, Fairmount College, Friends University, Midland College, McPherson College, Ottawa University, Southwestern College, Washburn College, and Salina Wesleyan College. This list is subject to change each year by the administrative committee of the Graduate School after consultation with the committee of visitation of colleges.

Candidates for fellowships are to be nominated by the faculties of the respective colleges, from the classes graduating in June before the

September when they are to enter upon their fellowships. However, in case there are no satisfactory candidates in the classes referred to, candidates may be nominated from other graduating classes. It is understood that the candidate shall be from among those attaining high scholarship in the respective classes. On or before the first day of March of the year in which the fellowship is awarded, the president of the college receiving the fellowship shall send the name of the candidate nominated by the college faculty or its committee, with a statement of his qualifications, to the Dean of the Graduate School of the University of Kansas.

The candidate's application will be considered by the administrative committee of the Graduate School as in case of other fellowships, and if satisfactory he will be recommended to the Board of Administration for election. A fellow so elected may choose his work, in accordance with the rules of the Graduate School, in any of the departments offering work in the Graduate School.

Each fellow may be called upon for not more than four hours' service per week in the department in which he chooses his major work.

DEPARTMENTS AND EQUIPMENT.

The following departments offer graduate work in the University. In the majority of them the facilities are adequate for thorough preparation for the doctor's degree, and in all of them the facilities are excellent for work leading to the master's degree. All the courses named are well equipped for graduate instruction. Laboratories and libraries are ample for this purpose. Especial opportunity is given for research and original investigation.*

Anatomy.
Bacteriology.
Bacteriology and Pathology.
Botany.
Chemistry.
Economics and Commerce.
Education.
Engineering.
Engineering—Mechanics.
Engineering, Civil.
Engineering, Electrical.
Engineering, Mechanical.
Engineering, Mining.
English Language and Literature.
Entomology.
Fine Arts.
Geology and Mineralogy.
Germanic Languages and
Literatures.

Greek.
History and Political Science.
Home Economics.
Journalism.
Latin Language and Literature.
Law.
Mathematics.
Pharmaceutical and Biological
Chemistry.
Philosophy and Psychology.
Physics and Astronomy.
Physiology and Pharmacology.
Romance Languages and
Literatures.
Sociology.
Zoölogy.

* For description of equipment of the departments, see College Section.

DESCRIPTION OF COURSES*

ANATOMY.

*Professors: SUNDWALL, COGHILL.**Demonstrator: E. SMITH.*

The minimum requirement for entrance into graduate courses is thirty-five hours of biological work, including the equivalents of zoölogy 1 or 2 and 3, and anatomy 1, 2, 3, 4, 5, 6, 7, 8, 9. A reading knowledge of both French and German is essential.

100.—COMPARATIVE NEUROLOGY. Five hours credit. Both semesters, by appointment. Fee, \$3. The evolution of the structure and function of the vertebrate nervous systems. Coghill.

101.—RESEARCH WORK IN NEUROLOGY. Five hours credit. Both semesters. *Admission may be obtained to this course only after consultation.* A comprehensive knowledge of general anatomy, physiology, and neurology is essential. Coghill.

102.—ANATOMICAL CORRELATION. Two hours credit. Both semesters. Normal functions are studied from the point of view of the reflex mechanism. Phylogenetic and ontogenetic considerations. Assignments of individual problems and written reports. Coghill.

103.—PHYSIOLOGICAL HISTOLOGY. Five hours credit. First semester. Fee, \$3. Changes in the cell occasioned by various stimuli will be studied by means of microchemical staining. Sundwall.

104.—ADVANCED WORK IN ANATOMY. Five hours credit. Both semesters. This course is especially designed for those wishing to do special work in gross or microscopic anatomy. Sundwall.

105.—RESEARCH WORK. Five hours credit. Both semesters. Various problems for research will be assigned to students who are candidates for the higher degrees. Sundwall and Coghill.

106.—SEMINAR. Three hours credit. Both semesters. In this course subjects of current interest are discussed as they appear in the various journals. Sundwall and Coghill.

The following courses are open to graduate students from other departments who may wish to elect certain courses in the department of anatomy.

150-153.—HUMAN DISSECTION. A complete dissection of all structures. Sundwall, Coghill and Smith.

Course 150.—Dissection of arm and thoracic wall. Three hours credit. Fee, \$5.

Course 151.—Dissection of leg, perineum and abdominal wall. Three hours credit. Fee, \$5.

Course 152.—Dissection of thoracic and abdominal viscera. Four hours credit. Fee, \$5.

Course 153.—Dissection of head and neck. Four hours credit. Fee, \$5.

* DAYS OF MEETING. Courses giving five hours credit meet daily from Monday to Friday, inclusive.

Courses giving three hours credit meet on Monday, Wednesday, and Friday, unless otherwise specified.

Courses giving two hours credit meet on Tuesday and Thursday, unless otherwise specified.

Courses numbered from 100 to 149 are for graduates only. All others are offered in the College or the professional schools; detailed descriptions of these will be found in the separate catalogs.

154.—HUMAN OSTEOLOGY. One hour credit. No fee. A systematic study of the human skeleton. Supplemented by drawings, clay-modeling, etc. Smith.

155.—TOPOGRAPHICAL ANATOMY. Three hours credit. Fee, \$3. A laboratory course in human anatomy, including dissections, study of models, preparations, cross sections. Prerequisites, courses 1, 2, 3, 4, 5. (At Rosedale.) Sundwall.

156.—HISTOLOGY AND SPLANCHNOLOGY. Five hours credit. Fee, \$5. A brief course in the structure of the cell, followed by a systematic study of the structure of organs. Coghill and assistants.

157.—EMBRYOLOGY. Two hours credit. Fee, \$3. The study of the embryology of the chick and pig, followed by a consideration of human embryology. Coghill and assistants.

158.—NEUROLOGY. Three hours credit. Fee, \$3. Gross and microscopic anatomy of the nervous system. Coghill and assistants.

BACTERIOLOGY.

Professor: BILLINGS.

Associate Professor: SHERWOOD.

Assistant Professors: CLAWSON,* YOUNG.

Instructor: MILLIGAN.

100.—RESEARCH IN BACTERIOLOGY. Two or more hours credit. By appointment. Graduates taking this course must satisfy the instructor that they are able to carry on original investigation in the special field selected. Fee, \$1 for each hour of enrollment.

Billings and the instructor directly concerned.

150.—GENERAL BACTERIOLOGY. Five hours credit. Both semesters. Fee, \$5. Billings, Sherwood and Milligan.

151.—GENERAL BACTERIOLOGY AND WATER ANALYSIS. Five hours credit. First semester. Bacteriology fee, \$3. Young.

153.—BACTERIOLOGY OF FOODS. Five hours credit. Second semester. Fee, \$5. Milligan.

154.—SPECIAL METHODS IN BACTERIOLOGY. Five hours credit. First semester. Fee, \$5. Sherwood.

155.—BACTERIOLOGY OF SOILS. Two hours credit. Second semester. Fee, \$2. Milligan.

156.—ADVANCED WATER BACTERIOLOGY. Three hours credit. Second semester. Fee, \$3. Young.

157.—IMMUNITY. Five hours credit. Second semester. Fee, \$5. Sherwood.

158.—PATHOGENESIS. Five hours credit. First semester. Fee, \$5. Clawson.

160.—BACTERIOLOGICAL JOURNALS. One hour credit. First semester, by appointment. Billings.

161.—SPECIAL PROBLEMS IN BACTERIOLOGY. Two to ten hours credit. Either semester, by appointment. Fee, \$1 for each hour.

Billings and the instructor directly concerned.

BACTERIOLOGY AND PATHOLOGY (Rosedale).

(MEDICAL.)

Professor: MAJOR.

Associate Professor: TRIMBLE.

101.—ADVANCED BACTERIOLOGY. By appointment. Includes the more difficult technical procedures and problems of immunity, serology, vaccines, etc. Major and Trimble.

*Absent on leave, 1916-'17.

102.—PATHOLOGY. By appointment. Research work in the various branches of pathology and immunology. Major and Trimble.

104.—SPECIAL PATHOLOGY. Three hours credit. First semester, Monday and Wednesday, 1 to 4. Recitations and laboratory. This course takes up the study of special pathology as illustrated by gross and microscopic specimens. Major.

BOTANY.

Professor: STEVENS.

Associate Professor: SHULL.

Assistant Professor: CHARLES.

Instructor: MIX.

Lecturer: HARE.

100.—MORPHOLOGY AND PHYSIOLOGY OF THE PLANT CELL. Five or ten hours credit. First and second semester, or both semesters, by appointment. Fee, \$1. A study of cell characters, adaptation to specific functions, and behavior under varying environment; nuclear and cell division; reproduction. Stevens.

101.—PLANT ECOLOGY. Three hours, five hours, or ten hours credit. Throughout the year, by appointment. The relation of plants to their environment. Field work and reading. Warming's, Schimper's, Clements' and Cowls' texts, and current literature. Stevens.

102.—RESEARCH IN PLANT HISTOLOGY. Both semesters, by appointment. Stevens.

103.—RESEARCH IN PLANT PHYSIOLOGY. Both semesters, by appointment. Open only to graduate students specializing in plant physiology, and who expect to take advanced degrees in the department with physiology as the major subject. Registration only after consultation. Shull.

104.—BOTANICAL CONFERENCE. One hour credit. By appointment. Review and discussion of current botanical work. Reports on assigned subjects.

150.—SYSTEMATIC BOTANY. Five hours credit. First semester.

Charles.

152.—PLANT GENETICS. Five hours credit. Second semester. Shull.

153.—PLANT PHYSICS. Five hours credit. First semester. Fee, \$1.

Shull.

154.—PLANT CHEMICS. Five hours credit. Second semester. Fee, \$1.

Shull.

155.—MORPHOLOGY OF THALLOPHYTES. Three hours or five hours credit. Second semester, by appointment. Fee, \$1. Charles.

156.—MORPHOLOGY OF FUNGI. Three hours credit. Second semester. Fee, \$1. Charles.

157.—MORPHOLOGY OF BRYOPHYTES AND PTERIDOPHYTES. Three hours credit. First semester. Fee, \$1. Charles.

158.—PROBLEMS IN THE MORPHOLOGY OF SPERMATOPHYTES. Five hours credit. First or second semester, or both, by appointment. Fee, \$1. Stevens.

159.—PROBLEMS IN THE MORPHOLOGY OF THALLOPHYTES AND ARCHGONIATES. Five hours credit. First or second semester, by appointment. Fee, \$1. Charles.

160.—AGRICULTURE. Three hours credit. First semester. Fee, \$1. Shull.

161.—TREES AND SHRUBS. Three hours credit. First semester. Stevens.

162.—PLANT PATHOLOGY. Five hours credit. First semester. Fee, \$1. Mix.

163.—METHODS IN PLANT PATHOLOGY. Five hours credit. Second semester. Fee, \$1. Mix.

164.—PROBLEMS IN PLANT PATHOLOGY. Three to five hours credit. Both semesters. Fee, \$1. Mix.

Graduate credit in the Botany Department will be allowed only on the satisfactory completion of original investigations on some agricultural topic chosen in consultation with the department and the presentation of a thesis embodying the results of the investigation.

CHEMISTRY.

Professors: BAILEY, CADY, DAINS, WHITAKER.

Associate Professor: ALLEN.

Assistant Professors: YOUNG, FARAGHER, LONG.

Instructor: ESTES.

PREREQUISITES. Students who expect to take a graduate major in chemistry and others who wish to do advanced work for graduate credit must present not less than the substantial equivalent of undergraduate courses 1, 2, 3, 51 and 61 or 62 before beginning their graduate work.

FEES. In laboratory courses a fee sufficient to cover expenses will be charged.

100.—ADVANCED QUALITATIVE AND SPECTRAL ANALYSIS.* Three hours credit. Second semester, by appointment. This course covers the ordinary methods of qualitative analysis as applied to the rarer elements and compounds, as well as training in the use of the spectroscope and spectrograph in the qualitative and quantitative examination of substances. Cady.

101.—MICRO-CHEMICAL ANALYSIS. Two hours credit. Second semester, by appointment. A laboratory course in qualitative analysis, identifying the substances by means of the microscope. Prerequisite, course 51. Allen.

102.—ADVANCED TOPICS IN INORGANIC CHEMISTRY. Two hours credit. First semester. Faragher.

103.—INORGANIC PREPARATIONS. (Advanced). Two or three hours credit. Second semester. Faragher.

104.—INORGANIC CHEMISTRY RESEARCH. Five hours credit. Both semesters. Faragher.

105.—RADIOCHEMISTRY AND RADIOACTIVITY. Three hours credit. Second semester, alternate years, by appointment. Lectures, recitations and laboratory experiments dealing with the chemistry of the radio-elements, their relation to the periodic system, and the transformations. It is recommended that the course be preceded by course 153 in the Department of Physics. Faragher.

110.—HISTORY OF CHEMISTRY. Two hours credit. Second semester. A course in the history of chemistry and the development of chemical theories. Lectures, library work, and the presentation of reports. The complete course requires two years, the first bringing the subject down to 1820 and the second from that time to date. Dains.

111.—CHEMICAL SEMINAR. One hour credit. Each semester, by appointment. A review of recent literature. Required of all graduate students majoring in chemistry.

First semester: Inorganic and physical chemistry. Cady.

Second semester: Organic chemistry and allied topics. Dains.

152.—QUANTITATIVE ANALYSIS. Two, three, or five hours credit. Either semester. Allen.

152A.—SANITARY WATER ANALYSIS. Three hours credit. Second semester, 10:30 to 12:30. Prerequisite, course 51. Bruckmiller.

- 152B.—BOILER WATER ANALYSIS. Two hours credit. Second semester, 10:30 to 12:30. Prerequisite, course 51. Bruckmiller.
- 152C.—GAS ANALYSIS. Two hours credit. First semester, by appointment. Prerequisite, course 51. Allen.
- 152D.—FOOD ANALYSIS. Three hours credit. Both semesters, by appointment. Prerequisite, courses 51 and 61 or 62. Long.
- 152E.—OIL ANALYSIS. Two hours credit. First semester, by appointment. Prerequisite, course 51. Allen.
- 152F.—IRON AND STEEL ANALYSIS. Two hours credit. Second semester, by appointment. Prerequisite, course 51. Allen.
- 152G.—THE CHEMISTRY OF MILLING AND BAKING. Two hours credit. Second semester, by appointment. Prerequisites, courses 51 and 61 or 62. Estes.
- 152H.—INDUSTRIAL ORGANIC ANALYSIS. Two hours credit. Second semester, by appointment. Prerequisites, courses 51 and 61 or 62. Estes.
- 152 I.—WET ASSAYING. Two hours credit. Second semester, by appointment. Prerequisite, course 51. Allen.
- 152 J.—ELECTROLYTIC ESTIMATION OF METALS. Two hours credit. Second semester, by appointment. Prerequisite, course 51. Allen.
- 153.—ASSAYING AND METALLURGICAL ANALYSIS. Three or five hours credit. Second semester, 1:30 to 5:30, and by appointment. Whitaker and Parkhurst.
- 155.—ANALYTICAL CHEMISTRY RESEARCH.* Five hours credit. Both semesters. Bailey and Allen.
- 156.—WATER ANALYSIS RESEARCH.* Five hours credit. Both semesters. Special lines of investigation along municipal and industrial water purification. Young.
- 157.—PHYSICOCHEMICAL METHODS OF ANALYSIS.* Two hours credit. First semester, by appointment. This course furnishes a training in the use of the methods of physical chemistry in analysis. The experiments will be carried out with the aid of the polariscope, refractometer, colorimeter, and nephelometer. Conductivity measurements and methods adapted from the phase law will also be used. Cady.
- 163.—ADVANCED ORGANIC CHEMISTRY. Five hours credit. Second semester, M. W. F., at 9:30; laboratory by appointment. Dains.
- 164.—ORGANIC PREPARATIONS (advanced).* Five hours credit. Either semester, by appointment. Must be preceded by course 163 or its equivalent. A study of organic synthetical methods and ultimate organic analyses. Dains.
- 165.—ORGANIC CHEMISTRY.* Five hours credit. Either semester, by appointment. A research course. This course offers, to those who have proper preparation, a chance for extended study and original investigation. Dains.
- 166.—ADVANCED TOPICS IN ORGANIC CHEMISTRY.* Two hours credit. First semester. Subjects to be discussed are as follows: 1916-'17, dyes; 1917-'18, nitrogen derivatives; 1918-'19, terpenes and sugars. Dains.
- 170.—PHYSICAL CHEMISTRY. Five hours credit. First semester, at 9:30. Cady.
- 171.—PHYSICAL CHEMISTRY II. Five hours credit. Second semester, at 9:30. Cady.
- 172.—ELECTROCHEMISTRY.* Five hours credit. Second semester, by appointment. A laboratory course on the reactions involving oxidation and reduction, electrosyntheses and decompositions, the preparation of chemicals, the reduction of metals from their ores, and the purification of metallurgical products. Prerequisite, course 170. Faragher.

173.—CHEMICAL STATICS AND DYNAMICS.* Three hours credit. Second semester, by appointment. A study of the manner in which chemical reactions take place, and the equilibria which result, from the standpoint of reaction velocities. Prerequisites: General physics, calculus, physical chemistry 170 or 171, and organic chemistry. Cady.

174.—THE PHASE LAW.* Two hours credit. Second semester, by appointment. A study of chemical equilibria from the standpoint of the phase law of Gibbs. Prerequisite, course 171. Cady.

175.—ADVANCED TOPICS IN PHYSICAL CHEMISTRY.* Two hours credit. Second semester, by appointment. Different topics will be taken up each year for a cycle of years. The topic for 1917-18 will be "Colloid Chemistry." Cady.

176.—PHYSICAL CHEMISTRY.* Five hours credit. Either semester, by appointment. A research course extending over two or more semesters. An opportunity is offered, to those who are sufficiently advanced, to carry on investigations in this branch of chemistry. Cady.

180.—INORGANIC INDUSTRIAL CHEMISTRY. Three hours credit. Second semester, at 11:30. Whitaker and Parkhurst.

181.—ORGANIC INDUSTRIAL CHEMISTRY. Three hours credit. First semester, at 9:30. Whitaker.

182.—INDUSTRIAL CHEMISTRY RESEARCH.* Five hours credit. Both semesters. Whitaker.

190.—METALLURGY I. Three hours credit. First semester, at 11:30. Whitaker.

191.—METALLURGY II. Three hours credit. Second semester, at 9:30. Whitaker.

192.—METALLURGICAL LABORATORY. Two hours credit. First semester, by appointment. Parkhurst.

193.—GENERAL METALLURGY. Two hours credit. First semester, at 11:30. Whitaker.

195.—METALLURGRAPHY.* Two hours credit. Second semester, by appointment. Laboratory work and conferences. Whitaker.

199.—TEACHERS' COURSE IN CHEMISTRY. Two hours credit. One hour each semester, by appointment. Stratton.

The profession of chemistry and chemical engineering is affording an increasing number of openings for men with a longer and more thorough training than is given in the four-year college or chemical engineering course. For this reason the department would call attention to the opportunities for graduate work in this institution leading to the degree of master of arts or master of science.

Without designating arbitrarily such a course, the department would suggest the following outline for the thirty hours of graduate work:

First: A minor, of not over ten hours, to be chosen from the fields of physics, geology, engineering, mathematics, or natural science.

Second: The major subject—chemistry, twenty hours. This requirement is to be satisfied by the election of a number of carefully selected graduate courses, a considerable portion of which should be classroom rather than laboratory work, and the completion of a thesis, requiring not over one-third of the student's time, which will demand the solution of some research problem along the line of pure or applied chemistry. This latter is an essential requirement for the degree, since experience of this nature is of especial value for one going into practical scientific work.

* In the Chemistry department, starred courses *above* 149 as well as courses from 100 to 149 are graduate only.

ECONOMICS AND COMMERCE.

Professor: BOYNTON.*Associate Professor:* PUTNAM.*Assistant Professors:* DUFFUS, ISE, WOODBURY, HARPER.

100.—SEMINAR. Two to ten hours credit. Either semester, by appointment. This is a research course for mature students. Applicants for admission to the seminar must satisfy the instructors of their preparation and ability to undertake original investigation. Each student must pursue a definite line of work under the personal direction of one of the instructors.

150.—MONEY AND CREDIT. Three hours credit. First semester, at 10:30. Boynton.

151.—BANKING. Three hours credit. Second semester, at 11:30. Boynton.

152.—PRACTICAL BANKING. Two hours credit. First semester, at 10:30. Boynton.

153.—INVESTMENTS. Two hours credit. Second semester, at 9:30. Boynton.

154.—BUSINESS ORGANIZATION AND MANAGEMENT. Three hours credit. (Not given in 1917-'18.)

155.—HISTORY AND ORGANIZATION OF TRANSPORTATION. Two hours credit. First semester, at 11:30. Boynton.

156.—RAILWAY RATES AND REGULATION. Two hours credit. Second semester, at 11:30. Boynton.

157.—CORPORATION FINANCE. Two hours credit. First semester, at 1:30. Putnam.

158.—INDUSTRIAL COMBINATIONS. Two hours credit. Second semester, at 1:30. Putnam.

159.—PUBLIC UTILITIES. Two hours credit. Second semester, at 8:30. Duffus.

160.—INSURANCE. Three hours credit. Second semester, at 8:30. Duffus.

161.—PUBLIC FINANCE. Three hours credit. First semester, at 8:30. Woodbury.

162.—AMERICAN METHODS OF TAXATION. Three hours credit. Second semester, at 10:30. (Not given in 1917-'18.) Woodbury.

163.—FINANCIAL HISTORY OF THE UNITED STATES. Two hours credit. First semester, at 8:30. (Not given in 1917-'18.) Woodbury.

164.—PRINCIPLES OF ACCOUNTING I. Three hours credit. First semester, at 2:30. Harper.

165.—PRINCIPLES OF ACCOUNTING II. Three hours credit. Second semester, at 2:30. Harper.

166.—COST ACCOUNTING. Two hours credit. First semester, at 2:30. Harper.

167.—ACCOUNTING PROBLEMS AND AUDITING. Two hours credit. Second semester, at 2:30. Harper.

168.—STATISTICS. Three hours credit. Second semester, at 10:30. Woodbury.

169.—BUSINESS LAW. Three hours credit. Second semester, at 9:30.

170.—LABOR PROBLEMS—TRADE-UNIONS. Two hours credit. First semester, at 8:30. Woodbury.

171.—LABOR PROBLEMS—THE STATE IN RELATION TO LABOR. Two hours credit. Second semester, at 10:30. Woodbury.

172.—IMMIGRATION PROBLEMS. Two hours credit. Second semester, at 10:30. (Not given in 1917-'18.) Woodbury.

- 180.—ECONOMICS AND AGRICULTURE. Three hours credit. Second semester, at 1:30. (Not given in 1917-'18.) Putnam.
- 181.—MARKETS AND MARKETING. Three hours credit. First semester, at 11:30. Duffus.
- 190.—ELEMENTS OF ECONOMICS. Three hours credit. First semester, at 1:30. (Not open to students who major in economics.) Putnam.
- 191.—VALUE, PRICE AND THE DISTRIBUTION OF WEALTH. Three hours credit. Second semester, at 1:30. Putnam.
- 193.—HISTORY OF ECONOMIC THOUGHT I. Two hours credit. First semester, at 9:30. (Not given in 1917-'18.) Ise.
- 194.—HISTORY OF ECONOMIC THOUGHT II. Two hours credit. Second semester, at 9:30. (Not given in 1917-'18.) Ise.

EDUCATION.

Professors: KELLY, OLIN, JOHNSON, SCHWEGLER, KENT.

Associate Professor: NUTT.

Assistant Professors: CARTER, BUCKNER, EIKENBERRY.

- 100.—SEMINAR IN EDUCATIONAL PSYCHOLOGY. Two hours credit. Both semesters, by appointment. Carter.
- 101.—SEMINAR IN MENTAL DEFECTS. Two hours credit. Both semesters, by appointment. Schwegler.
- 102.—SEMINAR IN EDUCATIONAL SYSTEMS OF HERBART AND FROEBEL. Two hours credit. First semester, by appointment. Olin.
- 103.—SEMINAR IN ORIGIN AND EARLY DEVELOPMENT OF UNIVERSITIES. Two hours credit. Second semester, by appointment. Olin.
- 104.—SEMINAR IN EDUCATIONAL ADMINISTRATION. Two hours credit. Both semesters, by appointment. Kelly.
- 150.—HISTORY OF ANCIENT MEDIAEVAL EDUCATION. Three hours credit. First semester, at 8:30 and 3:30. Olin.
- 151.—HISTORY OF MODERN EDUCATION. Three hours credit. First semester, at 2:30; second semester, at 8:30 and 3:30. Olin.
- 153.—SOCIAL EDUCATION. Two hours credit. First semester, at 11:30. Carter.
- 154.—EDUCATIONAL CLINIC. Three hours credit. Second semester, by appointment. Schwegler.
- 155.—MENTAL MEASUREMENT OF SCHOOL CHILDREN. Three hours credit. First semester, at 9:30. Schwegler.
- 156.—VOCATIONAL EDUCATION. Three hours credit. First semester, at 10:30. Johnson.
- 157.—SCHOOL HYGIENE. Three hours credit. Second semester, at 3:30. Nutt.
- 158.—NATIONAL EDUCATIONAL SYSTEMS. Three hours credit. Second semester, at 10:30. Johnson.
- 159.—EDUCATIONAL CLASSICS I. Two hours credit. First semester, at 10:30. Olin.
- 160.—EDUCATIONAL CLASSICS II. Two hours credit. Second semester, at 10:30. Olin.
- 161.—HIGH-SCHOOL ADMINISTRATION. Three hours credit. Both semesters, at 8:30. Johnson.
- 163.—EDUCATION IN AMERICA. Three hours credit. Second semester, at 9:30. Olin.
- 164.—EDUCATIONAL PSYCHOLOGY. Three hours credit. Second semester, at 1:30. Carter.
- 165.—GENETIC PSYCHOLOGY FOR TEACHERS. (Not given in 1915-'16.)

- 166.—EDUCATIONAL STATISTICS. Three hours credit. First semester, at 11:30. Buckner.
- 167.—ADVANCED EDUCATIONAL PSYCHOLOGY. Two hours credit. Second semester, at 9:30. Carter.
- 168.—PRINCIPLES OF EDUCATION. Three hours credit. First semester, at 11:30. Schwegler.
- 169.—TECHNIQUE OF TEACHING. Two hours credit. First semester, at 3:30. Nutt.
- 171.—THE ABNORMAL CHILD. Three hours credit. First semester, at 10:30. Schwegler.
- 172.—SUPERVISION OF INSTRUCTION. Two hours credit. First semester, at 9:30 (Saturday). Kent.
- 173.—CITY SCHOOL ADMINISTRATION. Two hours credit. Second semester, at 9:30 (Saturday). Kent.
- 174.—EDUCATIONAL ORGANIZATION AND ADMINISTRATION. Three hours credit. First semester, at 8:30. Buckner.
- 175.—PSYCHOLOGY OF HIGH-SCHOOL SUBJECTS. Three hours credit. First semester, at 9:30; second semester, at 1:30. Carter.
- 177.—PRACTICAL PROBLEMS OF PUBLIC SCHOOL EDUCATION. Two to three hours credit. Both semesters, Saturday, at 9.
- 178.—ADOLESCENCE. Three hours credit. Second semester, at 11:30. Schwegler.
- 179.—MORAL EDUCATION. Two hours credit. Second semester, at 11:30. Schwegler.

Teachers' Courses.

Graduate credit is not given for senior teaching.

- 180.—TEACHERS' COURSE IN PHYSICS. Three hours credit. Second semester, by appointment. Stimpson.
- 181.—TEACHERS' COURSE IN BIOLOGICAL SCIENCES. Three hours credit. Both semesters, at 11:30. Eikenberry.
- 182.—TEACHERS' COURSE IN PHYSICAL GEOGRAPHY. Two hours credit. Second semester, at 9:30. Haworth.
- 183.—TEACHERS' COURSE IN HOME ECONOMICS. Three hours credit. First semester, at 9:30. Sprague.
- 185.—TEACHERS' COURSE IN GERMAN. Three hours credit. Second semester, at 9:30. Engel.
- 186.—TEACHERS' COURSE IN ENGLISH. Three hours credit. First semester, at 2:30. Hopkins.
- 187.—TEACHERS' COURSE IN LATIN. Two hours credit. First semester, at 2:30. Walker.
- 188.—TEACHERS' COURSE IN ROMANCE LANGUAGES. Three hours credit. First semester, by appointment. NeuenSchwander.
- 189.—TEACHERS' COURSE IN MATHEMATICS. Three hours credit. Second semester, at 11:30. Mitchell.
- 191.—TEACHERS' COURSE IN HISTORY. Two hours credit. First semester, at 2:30. Melvin.
- 199.—TEACHERS' COURSE IN CHEMISTRY. Two hours credit. One hour each semester, by appointment. Stratton.

ENGINEERING MECHANICS.

Professor: H. A. RICE.

Assistant Professor: J. O. JONES.

- 154.—ENGINEERING MATERIALS. Five hours credit. First semester, by appointment. Rice.

155.—HYDRAULICS. Three hours credit. Either semester.

J. O. Jones.

158.—HYDRAULIC POWER. Three hours credit. First semester, by appointment.

J. O. Jones.

ENGINEERING—Civil.

Professors: H. A. RICE, C. O. WILLIAMS.
Assistant Professor: WELKER.

100.—STRUCTURAL DESIGNING. Five hours credit. First or second semester, by appointment. An advanced course covering cantilever, swing and suspension bridges, skeleton frames for buildings, train-shed roofs, standpipes, and elevated tanks. This course is designed to follow course 162. Lectures, recitations, and detail designing in the drawing room.

Rice.

101.—RESEARCH COURSE. A course of investigation of some matter directly related to civil engineering. This course should run through the year, making ten hours' credit. Arrangements for the course should be made with Professor Rice.

159.—MAINTENANCE OF WAY. Three hours credit. Second semester, Williams.

160.—RAILWAY TERMINAL STRUCTURES. Five hours credit. Second semester. An extended study of the design of retaining walls, water tanks, coal bunkers and coaling stations, ore bins, grain bins and elevators, turntables, transfer tables, train sheds, ash pits, chimneys, and other accessory structures.

Williams.

162.—BRIDGE DESIGNING. Four hours credit. Second semester.

Rice.

165.—REINFORCED CONCRETE. Three hours or five hours credit. First or second semester.

Rice.

168.—PAVEMENTS. Three hours credit. Second semester. Lectures and laboratory. A study of road-building rocks, bituminous materials, brick and brick clays, wood blocks, fillers, and the economical selection of type of pavement.

Williams.

169.—FOUNDATIONS. Three hours credit. Second semester. A study in the design and construction of ordinary and subaqueous foundations.

Williams.

172.—SANITARY ENGINEERING. Five hours credit. Second semester, by appointment. Public sanitation, particularly with reference to the water-borne infectious diseases. Influence of good sewerage, drainage and water supply upon the health of communities. Visits to sanitary engineering works. State control of public water supplies and pollution of streams. Prerequisites, courses in water supply and sewerage. Lectures, recitations, and reading.

Welker.

ENGINEERING—Mechanical.

Professors: WALKER, SIBLEY.
Associate Professor: SLUSS.

100.—ADVANCED ENGINEERING LABORATORY. Five hours credit. Both semesters, by appointment. Research work in some line connected with power development, fuels, lubrication or refrigeration, as may be selected in consultation with the instructor.

Sluss.

101.—ADVANCED DESIGNING. Five hours credit. Both semesters, by appointment. The course calls for a complete design in all details of some machine or of a plant for manufacturing or power development purposes. Steam and gas machinery and systems of power transmission are given particular attention.

Sibley.

102.—RESEARCH COURSE. Five hours credit. Each semester, by appointment. A full presentation of some engineering subject to be selected in consultation with the instructor in charge. It may be a subject which is being treated in course 100 or 101. Walker and Sluss.

103.—ADVANCED THERMODYNAMICS. Three hours credit. First semester, by appointment. An advanced course based on the mathematical theory of heat interchanges. Open to those who have taken the under-graduate course in the School of Engineering, or its equivalent. Walker.

ENGINEERING.

Professor: WALKER.

151.—MANUFACTURING. Two hours credit. First semester. Walker.

152.—INDUSTRIAL ADMINISTRATION. Three hours credit. Second semester. Walker.

ENGINEERING—Electrical.

Professor: SHAAD.

Assistant Professor: JOHNSON.

100.—POWER TRANSMISSION AND ELECTRIC RAILWAYS. Four hours credit. Second semester, by appointment. An advanced course in these subjects, consisting of lectures, assigned readings, and problems, special attention being paid to the engineering features of long-distance power transmission and the electrification of trunk-line railways. Shaad.

157.—ELECTRIC LIGHTING. Three hours credit. Second semester. Johnson.

158.—ELECTRIC POWER TRANSMISSION. Five hours credit. Second semester. Shaad.

162.—CENTRAL STATIONS. Three hours credit. Second semester. Shaad.

163.—ADVANCED ELECTRICAL LABORATORY. Five hours credit. Second semester. Johnson.

ENGINEERING—Mining.

Assistant Professor: GRIDER.

163.—MINE PLANT AND MILL DESIGN. Three hours credit. Second semester. Grider.

164.—MINING ENGINEERING. Three hours credit. Either semester. Grider.

166.—ADVANCED ORE DRESSING. Four hours credit. Second semester. Grider.

167.—MINERAL LAND SURVEYING. Three hours credit. First semester. Grider.

ENGLISH LANGUAGE AND LITERATURE.

Professors: DUNLAP, HOPKINS, O'LEARY.

Associate Professors: WHITCOMB, SISSON, JOHNSON, LYNN.*

Assistant Professors: GARDNER, BURNHAM.

REQUIREMENTS FOR MASTER'S DEGREE: (1) A schedule for the entire course for the master's degree must be approved by the department before work begins. (2) Three hours credit in Old English is required. (3) Fifteen of the total of thirty hours credit must be in strictly graduate English courses or investigation. (4) Work on the thesis must credit from six to ten hours.

* Absent on leave, 1916-'17.

103.—ENGLISH LITERATURE AS INFLUENCED BY OTHER LITERATURES. Three hours credit. Second semester, at 8:30. An introductory review of the subject, followed by a study of a selected topic. Whitcomb.

106.—ENGLISH PROSE OF THE EIGHTEENTH CENTURY. Three hours credit. First semester, at 9:30. The authors studied will be Swift, Addison, Steele, Johnson, Goldsmith, and Burke. Lectures, library work, and the preparation of a thesis. O'Leary.

107.—HISTORY OF ENGLISH CRITICISM. Two hours credit. Second semester, by appointment. This course will be devoted to the general development of English criticism, or to some specialized field, according to the preparation and needs of the class. Whitcomb.

108.—LATER NINETEENTH CENTURY VERSE. Three hours credit. Second semester, meets twice a week, by appointment. Special study of the poetry of Arnold, Fitzgerald, Clough, Swinburne, the Rossettis and William Morris. A brief survey of the minor poets of the period and of contemporary verse. Johnson.

109.—HISTORY OF THE LITERATURE AND THE TEACHING OF RHETORIC IN ENGLISH. Two hours credit. First semester, at 10:30. Lectures, library reading, and the preparation of a thesis. O'Leary.

110.—ENGLISH PROSODY. One hour credit. Second semester, by appointment. The history of English verse and verse forms. Hopkins.

111.—EPIC POETRY. Three hours credit. First semester, by appointment. Study of the form and subject matter of the epic, and of the general place of epic poetry in the history of English literature. Whitcomb.

114.—HISTORY OF THE ENGLISH LANGUAGE. Three hours credit. Second semester. After a study of the general principles of linguistic change and some study of Old English as a Germanic dialect, the development of the sounds, inflections, and syntax of English will be traced from old to modern times. Elementary Old English and a reading knowledge of German are prerequisite. Burnham.

115.—THE DEVELOPMENT OF ENGLISH PROSE. Two hours credit. First semester, Tuesday and Thursday, at 11:30. A study of the important prose between 1350 and 1660, with a survey of the development of prose style. Sisson.

116 and 117.—SEMINAR IN ENGLISH LITERATURE. Three to five hours credit. Both semesters, by appointment. Individual research. In this course a properly qualified student may investigate an approved subject, under the guidance of the instructor. Designed in part for students preparing theses for the master's degree. Whitcomb.

150.—NARRATION AND DESCRIPTION. Three hours credit. First semester, at 8:30, 9:30 and 10:30. O'Leary, Lynn, and Morgan.

151.—NARRATION AND DESCRIPTION. Two hours credit. Second semester, at 8:30, 9:30 and 10:30. O'Leary, Lynn, and Morgan.

152.—EXPOSITION. Two hours credit. First semester, at 9:30. Gardner.

153.—ADVANCED ARGUMENT. Three hours credit. Second semester, at 2:30. Hopkins.

155.—LITERARY CRITICISM. Two hours credit. First semester, at 1:30. Hopkins.

156.—VERSIFICATION. One hour credit. First semester, Monday, at 4:30. Hopkins.

157.—ESSAY WRITING. Two hours credit. Second semester, at 10:30. O'Leary.

158.—PROSE INVENTION. Two hours credit. Second semester, at 1:30. Hopkins.

- 160.—ELEMENTARY OLD ENGLISH. (Anglo-Saxon.) Three hours credit. Both semesters, at 3:30. Burnham.
- 161.—BEOWULF. Two hours credit. Second semester, at 3:30. Burnham.
- 162.—MIDDLE ENGLISH. Two hours credit. First semester, at 2:30. Burnham.
- 163.—MIDDLE ENGLISH. Three hours credit. Second semester, at 1:30. Burnham.
- 171.—AMERICAN LITERATURE. Three hours credit. First semester, at 1:30. Hopkins.
- 172.—AMERICAN LITERATURE. Three hours credit. Second semester, at 1:30. Hopkins.
- 173.—ENGLISH LITERATURE OF THE EIGHTEENTH CENTURY. Two hours credit. First semester, at 9:30. O'Leary.
- 174.—ENGLISH LITERATURE OF THE EIGHTEENTH CENTURY. Three hours credit. Second semester, at 9:30. O'Leary.
- 175.—VICTORIAN LITERATURE, exclusive of the novel and Tennyson and Browning. Two hours credit. First semester, at 10:30. Dunlap.
- 176.—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Three hours credit. First semester, at 11:30. Dunlap.
- 177.—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Three hours credit. Second semester, at 9:30. Dunlap.
- 178.—SHAKSPERE. Three hours credit. Both semesters, at 10:30. Dunlap.
- 179.—CHAUCER. Three hours credit. First semester, at 9:30. Dunlap.
- 180.—SHELLEY AND KEATS. Two hours credit. Second semester, at 11:30. Dunlap.
- 181.—BROWNING AND TENNYSON. Two hours credit. Second semester, at 8:30. Lynn.
- 182.—CARLYLE AND EMERSON. Two hours credit. Second semester, at 9:30. Johnson.
- 183.—MILTON AND HIS CONTEMPORARIES. Two hours credit. Second semester, at 9:30. Johnson.
- 184.—THE MODERN ENGLISH LYRIC. Two hours credit. First semester, at 3:30. Whitcomb.
- 185.—TECHNIC AND THEORY OF THE DRAMA. Two hours credit. First semester, at 2:30. Whitcomb.
- 186.—HISTORY OF THE ENGLISH DRAMA. Three hours credit. First semester, at 8:30. Johnson.
- 187.—HISTORY OF THE ENGLISH DRAMA. Three hours credit. Second semester, at 2:30. Whitcomb.
- 188.—THE ENGLISH NOVEL. Three hours credit. Second semester, at 11:30. Dunlap.
- 189.—THE ENGLISH ESSAY. Two hours credit. Second semester, at 9:30. O'Leary.

ENTOMOLOGY.

Professor: HUNTER.*Assistant Professor:* HUNGERFORD.*

- 100.—ORIGINAL INVESTIGATION. Five hours credit. Throughout the year, by appointment. Experimental work in parthenogenesis. Fee, \$1. Hunter.

*Absent on leave, 1916-'17.

101.—FIELD ENTOMOLOGY, BIOLOGICAL SURVEY. Five hours credit. Throughout the year, including the Summer Session. The department is engaged in a survey of insect life in the state. This work will be resumed at the opening of the Summer Session. The course consists of a taxonomic and biologic study of all existing forms, investigations in their life histories, and relations to environments. Appointments on this survey are made through consultation with the department. Hunter.

102.—MORPHOLOGICAL DEVELOPMENT. Five hours credit. Throughout the year. Problems assigned with reference to the attainments of individual students. Fee, \$1.50. Hunter.

103.—ORCHARD LIFE AND FOREST LIFE. Five hours credit. Throughout the year. The State Entomological Commission is conducting a comprehensive and detailed survey of the insect life as it pertains to the orchards and forestry of the state. In this work special attention is given to statistical methods and detailed illustrations of distribution by means of maps and charts. A limited number of well-prepared students may receive appointments for credit on this work. Hunter.

104.—CONFERENCE. One hour credit. Throughout the year, by appointment. This course affords an opportunity for the presentation and discussion of current research in this branch of science. During the present year the subject for consideration is the influence of chemical and climatic stimuli upon developing forms. Hunter.

105.—ADVANCED TAXONOMY OF INSECTS. Five hours credit. Throughout the year, by appointment. Fee, \$1. Hunter.

151.—MORPHOLOGY OF INSECTS. Three hours credit. First semester, 10:30 to 12:30. Fee, \$1.50. Young.

152.—SYSTEMATIC ENTOMOLOGY I. Two hours credit. First or second semester, 1:30 to 3:30. Fee, \$1. Hungerford.

153.—BIOLOGY OF THE ARTHROPODS. Two hours credit. Second semester, 10:30 to 12:30; first semester, 3:30 to 5:30. Fee, \$1. Hungerford.

154.—ADVANCED MORPHOLOGY OF INSECTS. Five hours credit. Throughout the year, by appointment. Fee, \$1.50. Hunter.

155.—TAXONOMY OF INSECTS. Three hours credit. First or second semester, by appointment. Fee, \$1. Hungerford.

156.—APPLIED ENTOMOLOGY. Two hours credit. First semester, 11:30 to 12:30. Fee, \$1. Hungerford.

157.—APPLIED ENTOMOLOGY II. Two hours credit. Second semester, 8:30 to 9:30. Hungerford.

158.—MEDICAL ENTOMOLOGY. Two hours credit. First semester, 10:30 to 11:30. Hunter.

159.—TEACHERS' COURSE. Three hours credit. Second semester, by appointment. Hungerford.

160.—AGRICULTURE. Two hours credit. First semester, 8:30 to 9:30. Hungerford. (Fall, 1916, Shull.)

FINE ARTS.

Professors: BUTLER, SKILTON, PREYER, DOWNING,
GRIFFITH, HEKKING.

PIANO. Five hours credit. Each semester, by appointment. Etudes of Phillipp, Liszt, MacDowell and others; transcriptions of Bach's organ fugues by Liszt, Tausig, Busoni; modern concert pieces and concertos. Open only to graduates of the artists' course or of other schools requiring a corresponding amount of work. Applicants for admission must play before the Fine Arts Faculty not less than three concert numbers, including a movement of a sonata or concerto, and give a public recital on completion of the course. Preyer.

ORGAN. Five hours credit. Each semester, by appointment. Greater preludes and fugues and chorale preludes of Bach, of modern German, French, English, and American masters. Oratorio accompaniment and playing with orchestra. This course is subject to the same conditions as Piano. Skilton.

OPERA AND ORATORIO. Five hours credit. By appointment. Practical and critical study of the development of opera and oratorio, the practical work consisting of one hour a week of vocal study of selected numbers; the theoretical work of two hours' critical examination of complete works. Open only to graduates of the voice department or of other schools requiring a corresponding amount of work. Applicants for admission must sing before the Music Faculty not less than three concert numbers, including an aria, and give a public recital on completion of the course. Butler, Downing and Skilton.

COMPOSITION. Five hours credit. By appointment. Original composition in large forms, suite sonata, overture, cantata, concerto. Open to graduates of the music department or of other schools requiring a corresponding amount of work. Applicants must present original compositions in the smaller forms which show evidences of talent and mastery of material. Preyer or Skilton.

DESIGN. Five hours credit. Each semester. Advanced designing, calling for the completion of an original painting containing not less than three figures. Shortest dimensions of the canvas to be not less than three feet. Open to graduates of the School of Fine Arts or of other schools of equal standing. Griffith and Hekking.

GEOLOGY AND MINERALOGY.

Professor: HAWORTH.

Assistant Professors: TODD, MOORE, HAYNES.

A graduate student who has completed a fairly good course in geology and mineralogy, and a term or two in surveying, metallurgy, and ore dressing, is well prepared to begin on the following graduate courses.

100.—GEOLOGIC METHODS, SECTIONS, PLANE-TABLE WORK, ETC. Five hours credit. First semester, at 1:30. Early in his graduate course the student should become familiar with methods of investigation and reporting followed by the leading geologists of the world, partly in order to prepare himself to conduct original investigations, and also to be able to understand and appreciate the voluminous reports of original investigations with which he will be brought in contact. Prerequisites, undergraduate geology 1, 50, 52, and 53, or their equivalents.

Haworth and Haynes.

101.—GEOLOGIC METHODS, SECTIONS, ETC. Five hours credit. Second semester, at 1:30. A continuation of 100. Haworth and Haynes.

102.—GEOLOGY OF NONMETALS, PRINCIPALLY COALS. Five hours credit. First semester, at 2:30. The object of this course is to study in detail the coal fields of the world, including their geology, geography and commerce, and approved methods of field investigation. Prerequisites, undergraduate geology 1, 50, 52, 53, and 55, or their equivalents.

Haworth and Haynes.

103.—GEOLOGY OF NONMETALS, PRINCIPALLY OIL AND GAS. Five hours credit. Second semester, at 1:30. The industrial world has so completely adapted itself to the uses of oil and gas that it would be calamitous for their production to fail. Consequently, it is important that the geologist be well informed on all phases of their geology, geography, commerce, and technology. Prerequisites, undergraduate geology 1, 50, 52, 53, and 55, or their equivalents.

Haworth and Haynes.

104.—GEOLOGY OF METALS, GENERAL PRINCIPLES OF ORE FORMATIONS, AND THE NOBLE METALS. Five hours credit. First semester, at 3:30. This course and course 105 are intended to constitute a year's study in the geology of metals. At the outset a thorough study of the origin of ore deposits will be made, in which the writings of the best authorities available will be used. It is presumed that this general study may be completed in time to make a somewhat detailed study of the noble metals by the end of the term. Prerequisites, undergraduate geology 1, 50, 52, 53, and 54. Haworth and Haynes.

105.—GEOLOGY OF METALS. Five hours credit. Second semester, at 3:30. A continuation of 104. Prerequisites as for 104. Haworth and Haynes.

106.—HISTORY, GEOLOGY, AND COMMERCE OF MINING. Five hours credit. Second semester, at 2:30. It is considered well worth while to devote one semester to a study of general mining, in which will be traced the centuries of mining history, in order that the practical man may have the assistance of all past experience to aid him in his profession. Prerequisites, a sufficiently extended study to assure an appreciation of the subject.

107.—EXPERT EXAMINATION OF PROPERTIES. Five hours credit. Second semester, by appointment. This course is given expressly to prepare the student for making expert examinations of properties covering all classes of mines, and producing a report on same prepared in the most approved manner. It will require much reading and consideration of various well-known mining properties, and a specific examination and report upon some particular property. Prerequisites, substantially all the preceding courses herein listed.

108.—DISSERTATION. Eight hours credit. Each semester. These two courses are a culmination of an extended graduate course in geology, and lead to the degree of doctor of philosophy. By the close of the preceding year the subject should be chosen, and at least a part of the field work should be done during the summer vacation. A specific area will be chosen for this purpose, and the student will be expected to make a complete survey and prepare a correct and elaborate report.

109.—ADVANCED INVERTEBRATE PALEONTOLOGY. Three or five hours credit. First semester. This course is an amplification of course 57 in the College. The entire collection of fossil invertebrates is placed in the student's hands for study. Emphasis is laid on the examination of original papers; and, as many of these are in German and French, the ability to read these languages is essential. Moore.

110.—ADVANCED STRATIGRAPHY. Three or five hours credit. Second semester. In this course a detailed study is made of the earth's stratigraphy as revealed by paleontology. Original papers are studied and the formations and deposits of different regions are compared. Moore.

111.—SUMMER FIELD WORK. Opportunity is offered advanced students in geology, either graduate or undergraduate, to do field work in geology in connection with the University Geological Survey of Kansas, under the guidance of the department of geology, for which credit will be given the same as for work done in the classroom and laboratory. By appointment. Haworth, Todd, Moore, and Haynes.

152 and 153.—STRUCTURAL AND DYNAMIC GEOLOGY.

154 and 155.—ECONOMIC GEOLOGY.

156.—PHYSIOGRAPHY.

157 and 158.—INVERTEBRATE PALEONTOLOGY.

112.—ADVANCED AND ORIGINAL WORK IN MINERALOGY. Three, five or ten hours credit. Both semesters, by appointment. This course may be chosen by graduate students who have completed courses 1, 50 and 51 in the College and who wish to specialize in the subject of mineralogy. Haynes.

113.—ADVANCED AND ORIGINAL WORK IN PETROGRAPHY. Three, five or ten hours credit. Both semesters, by appointment. This course may be chosen by graduate students who have completed courses 51, 52 and 53 in the College, and who wish to specialize in the subject of petrography. Haynes.

160.—SYSTEMATIC MINERALOGY.

161.—PETROGRAPHY.

GERMANIC LANGUAGES AND LITERATURES.

Professors: ENGEL, THURNAU.

Associate Professors: CORBIN,* KRUSE.

Assistant Professors: STURTEVANT, PALMBLAD.

Instructor: APPELBOOM.

100.—HISTORY OF THE GERMAN LANGUAGE. Two hours credit. Second semester, by appointment. Introduction to philological study. Wright's History of the German Languages, vol. I, and supplementary reading. Lectures and library work. Palmblad.

101.—GOTHIC. Two hours credit, first semester, and two hours, second semester, at 9:30. Braune's Gothic Grammar; Heyne's Ulfilas. Phonetics, grammar, and translation. Sturtevant.

102.—OLD NORSE. Two hours credit, first semester; and two hours, second semester, by appointment. Noreen's Altnordische Grammatik; Holthausen's Altisländisches Lesebuch; The Elder Edda. Sturtevant.

103.—GERMANIC MYTHOLOGY. Two hours credit. First semester, at 9:30. Kruse.

104.—OLD HIGH GERMAN. Two hours credit. First semester, by appointment. Braune's Althochdeutsche Grammatik und Lesebuch.

Sturtevant.

105.—OLD SAXON. Two hours credit. Second semester. Sturtevant.

106.—MIDDLE HIGH GERMAN. Two hours credit, first semester, and two hours, second semester, by appointment. Paul's Mittelhochdeutsche Grammatik; Hartmann, Der Arme Heinrich; Nibelungenlied. Selections from Walther von der Vogelweide. Engel.

107.—SEMINAR IN GERMAN LITERATURE. Two hours credit, first semester, and two hours, second semester, by appointment. The subject for study in 1917-'18 will be Goethe. Thurnau.

108.—THE ROMANTIC SCHOOL. Two hours credit, first semester, and two hours, second semester, by appointment. Early Romantic school, first semester, and later Romantic school, second semester. Lectures on the Romantic movement, library reading, and reports. Corbin.

109.—SPECIAL STUDIES IN HEBBEL. Two hours credit. Second semester, by appointment. Kruse.

152.—HISTORY OF GERMAN PROSE FICTION. Three hours credit. Second semester. Thurnau.

153.—THE LYRICS OF GOETHE. Two hours credit. First semester. Corbin.

154.—THE REALISTIC DRAMA. Three hours credit. First semester. Kruse.

155.—THE NATURALISTIC DRAMA. Two hours credit. Second semester. Kruse.

156.—THE ROMANTIC DRAMA. Two hours credit. Second semester. Kruse.

157.—STORM AND STRESS. Three hours credit. First semester. Engel.

*Absent on leave, second semester, 1916-'17.

- 158.—MODERN SWEDISH I. Three hours credit. First semester, by appointment. Sturtevant.
- 159.—MODERN SWEDISH II. Three hours credit. Second semester, by appointment. Sturtevant.
- 160.—MODERN NORWEGIAN I. Three hours credit. First semester, by appointment. (Not given in 1917-'18.) Sturtevant.
- 161.—MODERN NORWEGIAN II. Three hours credit. Second semester, by appointment. Sturtevant.
- 162.—MODERN DUTCH I. Three hours credit. First semester, by appointment. Appelboom.
- 163.—MODERN DUTCH II. Three hours credit. Second semester, by appointment. Appelboom.
- 164.—TEACHERS' COURSE. Three hours credit. Second semester, at 9:30. Review of special topics in grammar and syntax, with composition and practical illustrative exercises based on Thomas' German Grammar, some study and drill in elementary practical phonetics, and a comparison and discussion of different methods in teaching beginning German. Intended especially for those who expect to teach German in high schools. Open only to the best students of the department. (See School of Education.) Engel.

GREEK.

Professor: WILCOX.

Associate Professors: STERLING, BRANDT.

- 153.—HOMER'S ILIAD. Three hours credit. First semester. Brandt.
- 154.—PLATO'S GORGIAS OR REPUBLIC. Three hours credit. Second semester. Brandt.
- 155.—LYRIC POETRY. Two hours credit. First semester. Brandt.
- 156.—GREEK COMEDY. Two hours credit. Second semester. Brandt.
- 157.—HOMER'S ODYSSEY. Three hours credit. First semester. (Not given in 1917-'18.) Brandt.
- 158.—ALEXANDRIAN LITERATURE. Three hours credit. Second semester. (Not given in 1917-'18.) Brandt.
- 159.—THUCYDIDES. Two hours credit. First semester. (Not given in 1917-'18.) Brandt.
- 160.—ARISTOTLE. Two hours credit. Second semester. (Not given in 1917-'18.) Brandt.

The following courses may be taken as minors:

- 161.—THE GREEK IN ENGLISH. Three hours credit. First semester. Sterling.

COURSES WHICH REQUIRE NO KNOWLEDGE OF THE GREEK LANGUAGE.

- 165.—GREEK POETRY IN TRANSLATIONS. Three hours credit. First semester. Brandt.
- 166.—THE GREEK DRAMA IN TRANSLATIONS. Two hours credit. Second semester. Brandt.
- 168.—GREEK PROSE MASTERPIECES IN TRANSLATIONS. Three hours credit. Second semester. Sterling.
- 169.—GREEK ARCHITECTURE. Two hours credit. First semester. Brandt.
- 170.—GREEK SCULPTURE AND PAINTING. Three hours credit. Second semester. Brandt.

HISTORY AND POLITICAL SCIENCE.

Professors: HODDER, PATTERSON.*Associate Professors:* DYKSTRA, CRAWFORD, DAVIS.*Assistant Professors:* MOORE, MELVIN.

100 and 101.—SEMINAR IN EUROPEAN HISTORY. Three or five hours credit. First and second semesters, hours by appointment. A study of the sources in some restricted field and the preparation of papers based upon them. Designed to give practical experience in historical investigation. Melvin.

102 and 103.—SEMINAR IN AMERICAN HISTORY. Three or five hours credit. First and second semesters, hours by appointment. Practice work with source material. The subjects for investigation will be taken from the history of the trans-Missouri West. Hodder.

104 and 105.—SEMINAR IN POLITICAL SCIENCE. Three hours credit. First and second semesters, hours by appointment. Individual investigation under the direction of the instructor. The topics will be in the field of American political parties and party reform. Dykstra.

106.—POLITICAL THEORIES. Two hours credit. Second semester, at 9:30. A brief review of ancient and mediæval political philosophy, followed by a study of modern English and continental political theories. Dykstra.

150.—GREEK HISTORY. Two hours credit. First semester. Patterson.

151.—ROMAN HISTORY. Two hours credit. Second semester. Patterson.

152.—MEDIÆVAL CULTURE. Two hours credit. First semester. Patterson.

154.—ITALIAN RENAISSANCE. Two hours credit. Second semester. Patterson.

156 and 157.—ENGLISH INSTITUTIONS. Two hours credit. First and second semesters. Crawford.

160 and 161.—FRENCH REVOLUTION. Two hours credit. First and second semesters. Melvin.

162 and 163.—PROBLEMS OF MODERN EUROPEAN HISTORY. Three hours credit. First and second semesters. Melvin.

164.—AMERICAN COLONIAL HISTORY. Three hours credit. First semester. Hodder.

165.—AMERICAN REVOLUTION. Three hours credit. Second semester. Hodder.

166 and 167.—PRESIDENTIAL ADMINISTRATIONS. Five hours credit. First and second semesters. Hodder.

168.—LATIN AMERICA. Three hours credit. First semester. Davis.

180.—PRINCIPLES OF POLITICAL SCIENCE. Three hours credit. First semester. Dykstra.

182.—AMERICAN CONSTITUTIONAL LAW. Two hours credit. Second semester. Hodder.

183.—INTERNATIONAL LAW. Three hours credit. First semester. Moore.

184.—MUNICIPAL GOVERNMENT. Three hours credit. Second semester. Dykstra.

185.—CONTEMPORARY DIPLOMACY. Three hours credit. Second semester. Davis.

186.—POLITICAL PARTIES. Two hours credit. First semester. Dykstra.

187.—STATE GOVERNMENT. Two hours credit. Second semester. Dykstra.

188.—ELEMENTARY LAW. Three hours credit. Second semester. Moore.

HOME ECONOMICS.

*Professor: SPRAGUE.**Assistant Instructor: DAUM.*

100.—RESEARCH COURSE. Five or ten hours credit. Either semester, by appointment. This course should run through the year to gain ten hours credit. Original investigation of some unsolved problem relating to the home. Open to graduate students who have sufficient preparation. Fee, \$1 per hour. Sprague.

101.—SEMINAR. Three hours credit. Second semester, by appointment. Discussion of and reports on current literature relating to home economics. The full presentation of some subject will be required. Sprague.

151.—DIETETICS. Five hours credit. Second semester. Fee, \$2.50. Daum.

152.—SPECIAL PROBLEMS IN HOME ECONOMICS I. Three or five hours credit. First semester. Fee, \$1 per hour. Sprague.

153.—SPECIAL PROBLEMS IN HOME ECONOMICS II. Three or five hours credit. Second semester. Fee, \$1 per hour. A continuation of course 152. Sprague.

165.—PUBLIC ASPECTS OF THE HOUSEHOLD. Three hours credit. Both semesters. Daum.

JOURNALISM.

Professors: THORPE, FLINT.**Assistant Professor: EVANS.*

100.—SEMINAR. Three to five hours credit. Either semester, by appointment. A research course for mature students having the necessary preparation and ability to undertake a definite line of original investigation under the direction of instructors.

151.—MAGAZINE WRITING. Three hours credit. First semester. Evans.

152.—THE SHORT STORY. Three hours credit. Second semester. Evans.

153.—INTERPRETATION OF THE NEWS. Two hours credit. First semester. Evans.

154.—INTERPRETATION OF THE NEWS II. Two hours credit. Second semester. Evans.

155.—ADVERTISING I. Three hours credit. First semester. Flint.

156.—ADVERTISING II. Three hours credit. Second semester. Flint.

159.—EDITORIAL PROBLEMS AND POLICIES I. Three hours credit. First semester. Flint.

160.—EDITORIAL PROBLEMS AND POLICIES II. Three hours credit. Second semester. Flint.

LATIN LANGUAGE AND LITERATURE.

*Professor: WALKER.**Associate Professors: OLIVER, MURRAY.**Assistant Professor: CRESSMAN.*

100.—THE TOPOGRAPHY OF ROME. Two hours credit. Second semester, at 1:30. Lectures and reading. Illustration by the use of photographs and stereopticon. Each member of the class will present written reports on subjects investigated by himself. Oliver.

101.—INVESTIGATION IN ROMAN POLITICAL INSTITUTIONS. Two to five hours credit. First or second semester, by appointment. Given only after or in connection with course 159. This course will be conducted by addi-

* Absent on leave, 1916-'17.

tional lectures, and by additional investigations by members of the course. The master's thesis may be worked up in connection with this course. Murray.

102.—LATIN EPIGRAPHY. Three hours credit. Second semester, at 11:30. This course has as its object an acquaintance with the forms and subject matter of Latin inscriptions. Members will be assigned investigations of the contributions of epigraphy to political, constitutional, and economic history, and to other fields. Murray.

103.—INVESTIGATION IN LATIN EPIGRAPHY. Two to five hours credit. By appointment. Given only in connection with course 102. Additional investigation of special topics will be expected of members of the course. Murray.

104.—ELEMENTARY SANSKRIT. Three hours credit. Second semester, at 2:30. This course is designed especially for classical students, but may be taken with profit by advanced students of any language. It includes the elements of the language and the reading of easy texts. Special emphasis is given to phonetic and syntactic phenomena, which throw light on the grammar of Latin and Greek. Cressman.

105.—COMPARATIVE GRAMMAR. Three hours credit. First semester, at 2:30. This course gives a description and history of the Latin sounds and inflections, supplemented by a comparison of Latin with the related languages, Greek, Sanskrit, and German, to illustrate linguistic principles existing in all Indo-European languages. Cressman.

106.—SEMINAR IN SYNTAX. Three or five hours credit. First semester, at 11:30. Walker.

107.—SEMINAR (continued). Three or five hours credit. Second semester, at 2:30. A subject for the thesis required of all candidates for the degree of master of arts is expected to present itself in the course of the work, and in the second term a portion of the time may be devoted to the working up of that subject. Walker.

150.—ADVANCED LATIN COMPOSITION. Two hours credit. First semester. Walker.

151.—PLAUTUS. Two hours credit. (Not given in 1917-'18.)

152.—VERGIL'S ECLOGUES AND GEORGICS. (Not given in 1917-'18.)

153.—CATULLUS, TIBULLUS, AND PROPERTIUS. Two hours credit. First semester. Murray.

154.—PLINY'S LETTERS. Two hours credit. Second semester. Walker.

155.—LUCRETIUS. Three hours credit. First semester. Oliver.

156.—THE ANNALS OF TACITUS. Three hours credit. (Not given in 1917-'18.)

157.—JUVENAL. Three hours credit. Second semester. Murray.

158.—LITERATURE OF THE EMPIRE. Three hours credit. (Not given in 1917-'18.)

159.—ROMAN POLITICAL INSTITUTIONS. Three hours credit. First semester. Murray.

160.—CÆSAR'S GALLIC CAMPAIGNS. Three hours credit. (Not given in 1917-'18.)

161.—VERGIL. Three hours credit. Second semester. Walker.

162.—TEACHERS' COURSE IN LATIN. Two hours credit. First semester. Walker.

163.—HEBREW LANGUAGE. Three hours credit. First semester, at 8:30. An elementary course, including the grammatical principles of the language, the acquisition of a vocabulary, exercises in the translation of English into Hebrew, and the reading of a few chapters in Genesis. Cressman.

164.—HEBREW LANGUAGE. Three hours credit. Second semester, at 10:30. A continuation of the preceding, with further reading in the Old Testament. Cressman.

LAW.

Professors: GREEN, BURDICK, HIGGINS,* HUMBLE.

100.—CONSTITUTIONAL LAW. Five hours credit. Daily, second semester, at 11:30. General principles governing constitutions; the United States and the states; establishment and amendment of constitutions; construction and interpretation; departmental powers; police power; eminent domain; taxation; civil rights; constitutional guaranties; laws impairing the obligation of contracts, retroactive laws. Green.

101.—COMMON-LAW PLEADING. Two and one-half hours credit. Daily, first half of first semester, at 8:30. An analytical and historical study of the law of remedies at common law, including ancient modes of trial; special topics assigned, such as assumpsit, trover, trespass, for historical investigation of the development of the law of contracts and of torts. Higgins.

102.—JURISPRUDENCE. Two and one-half hours credit. Daily, first half of first semester, at 11:30. An analytical and historical study of jurisprudence, viz.: the science of human relations regulated by positive law; the theories of the state, sovereignty and government; an historical examination of the systems of English and American common law and equity. Humble.

103.—ROMAN LAW. One hour a week for twenty-seven weeks, first semester and first half of second semester, at 9:30. Development and extension of Roman law; its revival and present influence; the *corpus juris civilis*; the law of persons, of the family, of property, of servitude, of obligations, of delicts, of inheritance, of procedure, of criminal law, etc. Burdick.

MATHEMATICS.

Professors: VAN DER VRIES, ASHTON.

Associate Professor: MITCHELL.

Assistant Professors: STOUTER, LEFSCHETZ.

100.—THEORY OF FUNCTIONS OF A COMPLEX VARIABLE. Three hours credit. Throughout the year, by appointment. An introduction to the general theory of functions of a complex variable. Ashton.

101.—THEORY OF FUNCTIONS OF A REAL VARIABLE. Three hours credit. Throughout the year, by appointment. The theory of assemblages, limits, continuity, convergence, derivatives, integrals, etc. Mitchell.

102.—THEORY OF ELLIPTIC FUNCTIONS. Three hours credit, throughout the year. Ashton.

107.—HIGHER ALGEBRA. Three hours credit. Second semester, by appointment. Selected topics in Bocher's Introduction to Higher Algebra. Fundamental properties of polynomials; properties of determinants; theory of linear dependence; systems of linear equations; linear transformations; multiplication of matrices; bilinear forms; properties of polynomials in general. Mitchell.

108.—GALOIS'S THEORY OF EQUATIONS. Two hours credit. First semester, by appointment. The application of the method of groups to the study of algebraic equations. Ashton.

110.—THEORY OF CURVES AND SURFACES. Three hours credit. Throughout the year. Van der Vries.

111.—DIFFERENTIAL GEOMETRY. Two hours credit. Throughout the year, by appointment. Applications of the calculus to the theory of curves and surfaces. Mitchell.

113.—PROJECTIVE GEOMETRY. Three hours credit. Throughout the year, by appointment. The logical foundations of projective geometry;

* Absent on leave, 1916-'17.

principle of duality; projective transformations in one-, two- and three-dimensional forms; conic sections; introduction of analytic methods on a synthetic basis. The general projective group and its important sub-groups. Mitchell.

114.—FOURIER'S SERIES, AND THE POTENTIAL FUNCTION. Three hours credit. Throughout the year, by appointment. Development of functions in Fourier's series, with applications to the solution of problems in physics. Introduction to spherical harmonics. The potential function. Prerequisites, courses 50, 51, 55. Ashton and M. E. Rice.

115.—PROJECTIVE DIFFERENTIAL GEOMETRY. Three hours credit. Throughout the year, by appointment. Elements of Lie's theory; invariants and covariants of linear homogeneous differential equations; projective differential geometry of plane and space curves, ruled surfaces, and curves on ruled surfaces. Stouffer.

120.—CELESTIAL MECHANICS. Three hours credit. Throughout the year, by appointment. Rectilinear motion, central forces, attraction, and potential, the two-body problem, general integrals of the problem of n bodies, the three-body problem, perturbations. Moulton's Celestial Mechanics, and collateral reading. Stouffer.

121.—THEORY OF NUMBERS. Three hours credit. Second semester, by appointment. Divisibility, congruences, primitive roots, quadratic residues, quadratic forms, laws of reciprocity of Legendre-Gauss.

Lefschetz.

150.—ANALYTICAL MECHANICS. Three hours credit. Second semester. Stouffer.

151.—DIFFERENTIAL EQUATIONS. Three hours credit. First semester. Lefschetz.

152.—ADVANCED CALCULUS. Three hours credit. First semester.

Ashton.

153.—ELLIPTIC INTEGRALS. Two hours credit. Second semester.

Ashton.

154.—ELEMENTARY NUMBER THEORY. Two hours credit. Second semester. Lefschetz.

155.—SERIES. Two hours credit. First semester. Mitchell.

157.—COMPLEX NUMBERS. Two hours credit. Second semester.

Ashton.

159.—MODERN GEOMETRY I. Three hours credit. First semester.

Van der Vries.

160.—MODERN GEOMETRY II. Three hours credit. Second semester.

Van der Vries.

162.—HISTORY OF MATHEMATICS. Two hours credit. First semester.

Mitchell.

189.—TEACHERS' COURSE. Two hours credit. Second semester.

Mitchell.

PHARMACEUTICAL AND BIOLOGICAL CHEMISTRY.

Professors: SAYRE, HAVENHILL.

Associate Professor: NELSON.*

100.—PHYTOCHEMISTRY (PLANT CHEMISTRY). Five hours credit. First and second semesters. Original investigation and research work on the chemical constituents of plants, dealing especially with such constituents as exert a marked physiological action when introduced into the animal economy. Sayre.

101.—RESEARCH IN BIOLOGICAL CHEMISTRY. Two or more hours credit. Throughout the year, by appointment. Sayre or Nelson.

* Absent on leave, 1916-'17.

102.—BIOCHEMICAL SEMINAR. (For graduates only.) Weekly meetings. Prerequisites, a reading knowledge of French and German. Discussion and reports on current biochemical literature. Nelson.

103.—ANALYSIS OF DRUGS AND DIETETICS. Two, three or five hours credit. Either semester. This is a companion course to food analysis (see chemistry 152D), and is arranged especially for students who desire to qualify as food and drug analysts. Sayre or Havenhill.

104.—RESEARCH IN PHARMACEUTICAL CHEMISTRY. Two or more hours credit. Throughout the year, by appointment. Havenhill.

150.—BIOLOGICAL CHEMISTRY. Four or six hours credit. Second semester. A survey of the field of biochemistry. Lectures, conferences, laboratory work. Nelson and assistants.

153.—COLLOID CHEMISTRY. Two hours credit. First semester. A study of colloids and the colloidal state of matter. Special emphasis is laid on the application of colloid chemistry to problems in biochemistry. Open to Senior and graduate students. Nelson.

PHILOSOPHY AND PSYCHOLOGY.

Professors: HOLLANDS, TEMPLIN, HUNTER.

Associate Professor: DOCKERAY.

Assistant Professor: MITCHELL.

Instructor: PATERSON.

100.—PHILOSOPHICAL SEMINAR. Five or ten hours credit. First semester, by appointment. Opportunity will be given graduate students to continue in a more exhaustive manner the study of any of the subjects offered in the College courses, and to engage in original investigation. The work will be arranged to suit the special needs of individual students and will be under the immediate supervision of some instructor in the department.

101.—PHILOSOPHICAL SEMINAR. Five or ten hours credit. Second semester, by appointment. A continuation of the preceding course.

102.—PSYCHOLOGICAL SEMINAR. Three, five, or ten hours credit. First semester. Opportunity is given graduate students for the advanced study of special topics in psychology. The organization of the seminar will take different forms to meet the needs of its members. Individual study of theoretical questions will be provided for by individual appointment. Group study of theoretical questions will be conducted through weekly meetings.

103.—PSYCHOLOGICAL SEMINAR. Three, five, or ten hours credit. Second semester. A continuation of course 102.

The following courses are open to undergraduates also. (For description, see The College.)

150.—ATTENTION, LEARNING AND THOUGHT. Three hours credit. First semester. Hunter.

151.—ANIMAL BEHAVIOR. Three hours credit. Second semester. Hunter.

152.—ABNORMAL PSYCHOLOGY. Three hours credit. Second semester. Dockeray.

153.—CHILD PSYCHOLOGY. Two hours credit. First semester. Dockeray.

154.—INDIVIDUAL PSYCHOLOGY. Three hours credit. First semester. Paterson.

155.—SOCIAL PSYCHOLOGY. Three hours credit. Second semester. Hunter.

156.—INSTINCT AND EMOTION. Three hours credit. Second semester. (Not given in 1917-'18.) Hunter.

- 157.—PSYCHOLOGICAL ÆSTHETICS. Two hours credit. Second semester. Hunter.
- 167.—PRINCIPLES OF PSYCHOLOGY. Three hours credit. Second semester. Hunter.
- 168.—ADVANCED PSYCHOLOGY I. Two to five hours credit. First semester. Hunter, Dockeray and Paterson.
- 169.—ADVANCED PSYCHOLOGY II. Two to five hours credit. Second semester. Hunter, Dockeray and Paterson.
- 170.—HISTORY OF PHILOSOPHY I. Three hours credit. First semester. Hollands.
- 171.—HISTORY OF PHILOSOPHY II. Three hours credit. Second semester. Hollands.
- 172.—PHILOSOPHICAL CLASSICS I. Two hours credit. First semester. Mitchell.
- 173.—PHILOSOPHICAL CLASSICS II. Two hours credit. Second semester. Mitchell.
- 174.—THEORY OF KNOWLEDGE. Three hours credit. First semester. Hollands.
- 175.—METAPHYSICS. Three hours credit. Second semester. Hollands.
- 176.—PHILOSOPHY OF RELIGION. Two hours credit. First semester. Hollands.
- 177.—ADVANCED LOGIC. Three hours credit. Second semester. Mitchell.
- 180.—SYSTEMATIC ETHICS. Three hours credit. First semester.
- 181.—PRACTICAL ETHICS. Two hours credit. Second semester.

PHYSICS AND ASTRONOMY.

Professor: KESTER.

Associate Professor: M. E. RICE.

Assistant Professors: STIMPSON, T. T. SMITH, STOUTER.

- 100.—GRADUATE LABORATORY. Two to five hours credit. Either semester, by appointment. Kester, Rice, and Smith.
- 101.—THEORETICAL MECHANICS. Three hours credit. Through first and second semesters, by appointment. Lectures, with a problem hour each week. Prerequisites, course 50 or its equivalent, and another course of the same grade. Offered in alternate years. Kester.
- 102.—THEORY OF HEAT AND THERMODYNAMICS. Two hours credit. Through first and second semesters, by appointment. Lectures and problems. A development of Gibbs's ideas of thermodynamic potentials and of equilibrium in systems containing several components in various phases. Prerequisites, courses 50 and 51, or 52 and 53, or equivalents. Offered in alternate years. Kester.
- 103.—THEORY OF ELECTRICITY. Three hours credit. Through first and second semesters, by appointment. Lectures and problems. Prerequisites, course 52 or its equivalent, and another course of the same grade. Offered in alternate years. (Not offered in 1917-'18.) Kester.
- 104.—ADVANCED OPTICS. Two hours credit. Through first and second semesters, by appointment. Lectures and problems. A development of the electromagnetic theory of light, of the Abbe theory of optical instruments, etc. Prerequisites, course 51 or its equivalent, and another course of the same grade. Offered in alternate years. (Not offered in 1917-'18.) T. T. Smith.

Courses 101, 102, 103, and 104 together form a two-year cycle, developing the fundamental parts of physics in a rigorous and detailed manner. Other courses, covering more special (in some cases newer) topics, are listed below.

105.—ELECTRON THEORY. Two hours credit. Throughout the year, by appointment. Theory of electromagnetic mass and of conduction of electricity through metals. Prerequisites, physics 50 and 51, or 52 and 53, or equivalents. Offered in alternate years. Kester.

106.—OSCILLATORY ELECTRIC CURRENTS AND ELECTROMAGNETIC WAVES. Three hours credit. Second semester, by appointment. Lectures and problems, giving the principles which underlie wireless telegraphy and telephony. Prerequisites, course 52 or its equivalent, another course of same grade, and some differential equations. Offered in alternate years. (Not offered in 1917-'18.) M. E. Rice.

107.—RESEARCH AND THESIS. Three to ten hours credit. Either semester. Students who are carrying on original investigations (either experimental or theoretical) in physics will register in this course. Kester, M. E. Rice, and T. T. Smith.

114.—FOURIER'S SERIES AND THE POTENTIAL FUNCTION. Three hours credit. Throughout the year, by appointment. Development of functions in Fourier's series, with application to the solutions of problems in physics. Introduction to spherical harmonics. The potential function, with applications to problems in electricity. Prerequisites, physics 50 or mathematics 50, mathematics 51 and 55, or equivalent. Offered in alternate years. (Not offered in 1917-'18.) M. E. Rice and Ashton.

150.—MECHANICS AND HEAT. Three hours credit. First semester. Kester.

It is recommended that this course be followed by Mathematics 150, Analytic Mechanics. Three hours.

151.—LIGHT AND RADIANT ENERGY. Three hours credit. Second semester. Offered in alternate years. T. T. Smith.

152.—ELECTRICITY. Three hours credit. First semester. M. E. Rice.

153.—CONDUCTION OF ELECTRICITY THROUGH GASES. Three hours credit. Second semester. Offered in alternate years. Kester.

155.—PHYSICS LABORATORY. Light and radiant energy. Two to five hours credit. Second semester. By appointment. T. T. Smith.

156.—PHYSICS LABORATORY. Electricity. Two to five hours credit. Either semester. By appointment. M. E. Rice.

157.—PHYSICS LABORATORY. Gas conduction and radioactivity. Two to five hours credit. Second semester. By appointment. Offered in alternate years. Kester.

158.—TEMPERATURE CONTROL AND MEASUREMENT. Three hours credit. Second semester. Offered in alternate years. Kester.

160.—OPTICAL INSTRUMENTS. Three hours credit. Second semester. Offered in alternate years. (Not offered in 1917-'18.) T. T. Smith.

161.—ALTERNATING CURRENTS. Three hours credit. Second semester, by appointment. Offered in alternate years. M. E. Rice.

163.—PHYSICS COLLOQUIUM. One hour credit. Either semester, by appointment.

180.—TEACHERS' COURSE IN PHYSICS. Three hours credit. Second semester, by appointment. Stimpson.

100.—INTRODUCTION TO CELESTIAL MECHANICS. Three hours credit. Second semester, by appointment. Prerequisites, astronomy 1, physics 5 and 6 or equivalent, analytical geometry, and calculus.

182.—SPHERICAL AND PRACTICAL ASTRONOMY. Throughout the year, by appointment. Stouffer.

184.—INTRODUCTION TO ASTROPHYSICS. Three hours credit. First semester, by appointment.

185.—THEORETICAL ASTRONOMY. Three hours credit. Second semester, by appointment.

186.—PRACTICAL WORK IN COMPUTING. Two hours credit. Second semester, by appointment.

PHYSIOLOGY AND PHARMACOLOGY.

Professors: HYDE, MATTHEWS, STOLAND.

100.—RESEARCH WORK IN PHYSIOLOGY OR PHARMACOLOGY. Five hours credit. Each semester. Staff.

101.—GENERAL AND COMPARATIVE PHYSIOLOGY. Five hours credit. A study of the phenomena of irritability, or the response of the living organisms to their environments. Prerequisites, embryology, histology, and neurology. Matthews.

150.—ADVANCED EXPERIMENTAL PHYSIOLOGY. Five hours. Both semesters. Hyde.

151.—ADVANCED EXPERIMENTAL PHYSIOLOGY. Five hours credit. Both semesters. Hyde.

152.—RESEARCH AND SEMINAR. Two to ten hours. Either or both semesters. Research pertaining to the special senses, or nervous system, neuromuscular or circulatory systems; heart or blood or respiration. By appointment. Open to those prepared for it. Hyde.

153.—ORIGINAL RESEARCH IN EXPERIMENTAL AND COMPARATIVE PHYSIOLOGY. Two to ten hours. Either or both semesters. By appointment. Investigation in comparative physiological studies of the functions and activities of different forms of life. Open to those who are prepared for it. Hyde.

160.—CHEMICAL PHYSIOLOGY. Five hours credit. First semester. Stoland.

161.—EXPERIMENTAL PHYSIOLOGY. Three hours credit. Second semester. Stoland.

162.—SPECIAL PHYSIOLOGY OF THE ORGANS OF INTERNAL SECRETION. Three to five hours credit. Second semester. By appointment. Matthews and Stoland.

ROMANCE LANGUAGES AND LITERATURES.

Professor: GALLOO.

Associate Professors: NEUEN SCHWANDER, OWEN.

Assistant Professors: COWPER, SKIDMORE, STANTON.

100 and 101.—SEMINAR. Five hours credit. Each semester by appointment. Research course for advanced students, who will be given an opportunity under the immediate supervision of the department, to carry on investigation in the field of Romance linguistics or literature.

Galloo, Neuen Schwander, Owen.

188.—TEACHERS' COURSE. Three hours credit. First semester, by appointment. Neuen Schwander.

102.—OLD FRENCH. Three hours credit. First semester, by appointment. Phonology and morphology of old French, with some discussion of syntax. *Le Pèlerinage de Charlemagne à Jérusalem* Aucassin et Nicolette. Must be preceded by courses 162 and 163 or their equivalents. Galloo.

103.—HISTORY OF THE FRENCH LANGUAGE. Three hours credit. Second semester, by appointment. Its rise from Low Latin; the additions from other sources; its growth and modifications. Galloo.

104.—MIDDLEVAL FRENCH LITERATURE. Three hours credit. Second semester, by appointment. From the first literary monuments to the Renaissance. Galloo.

105.—FRENCH LITERATURE OF THE SIXTEENTH CENTURY. Two hours credit. First semester, by appointment. The Renaissance in French literature. The beginnings of classicism. The *Pléiade*. Skidmore.

106.—MOLIERE. Three hours credit. First semester, by appointment. Study of Molière; his life and surroundings; his plays—their sources and influence. One or more essays will be written, preferably in French. Galloo.

107.—THE LITERARY MOVEMENT IN THE SECOND HALF OF THE NINETEENTH CENTURY. Three hours credit. Second semester, by appointment. The reaction against romanticism, the Parnassiens, realism and naturalism. The reaction against the scientific spirit, idealism and symbolism. The rise and growth of the new literary criticism. A large amount of reading is required. Reports and an essay in French. Galloo.

150.—THE FRENCH ELEMENT IN ENGLISH. Three hours credit. Second semester, by appointment. Neuen Schwander.

153.—HISTORY OF EARLY FRENCH LITERATURE. Three hours credit, first semester, by appointment. Galloo.

154.—HISTORY OF MODERN FRENCH LITERATURE. Three hours credit. Second semester, by appointment.

155.—FRENCH LITERATURE OF THE SEVENTEENTH CENTURY. Two hours credit. First semester, by appointment. Stanton.

156.—FRENCH LITERATURE OF THE EIGHTEENTH CENTURY. Two hours credit. Second semester, by appointment. Neuen Schwander.

157.—THE ROMANTIC SCHOOL I. Three hours credit. First semester, by appointment. Galloo.

158.—THE ROMANTIC SCHOOL II. Two hours credit. Second semester, by appointment. Galloo.

159.—DEVELOPMENT OF THE FRENCH NOVEL I. Two hours credit, First semester, by appointment. Galloo.

160.—DEVELOPMENT OF THE FRENCH NOVEL II. Three hours credit. Second semester, by appointment. Galloo.

161.—THE FRENCH DRAMA. Three hours credit. Second semester, by appointment. Galloo.

162.—OLD FRENCH. Two hours credit. First semester, by appointment. Galloo.

163.—OLD FRENCH. Two hours credit. Second semester, by appointment. Galloo.

110.—PROVENÇAL. Two hours credit. First semester, by appointment. Grandgent's *Provençal Phonology and Morphology*, Appel's *Provenzalische Chrestomathie* and Schultz-Gora's *Altprovenzalisches Elementarbuch*. Neuen Schwander.

111.—PROVENÇAL. Two hours credit. Second semester, by appointment. A continuation of course 110. Neuen Schwander.

120.—EARLY SPANISH. Two hours credit. Second semester, by appointment. Menéndez Pidal's *Manual de gramática histórica española*; *Poema del Cid* (Menéndez Pidal ed.) and *Poema de Fernán González* (Marden ed.) Owen.

173.—DON QUIJOTE. Three hours credit. Second semester, by appointment. Skidmore.

174.—HISTORY OF EARLY SPANISH LITERATURE. Three hours credit. First semester, by appointment. Owen.

175.—HISTORY OF MODERN SPANISH LITERATURE. Three hours credit. Second semester, by appointment. Owen.

176.—THE SPANISH NOVEL OF THE SIXTEENTH AND SEVENTEENTH CENTURIES. Two hours credit. First semester, by appointment. Owen.

177.—THE CLASSIC SPANISH DRAMA. Two hours credit. Second semester, by appointment. Cowper.

130.—THE ITALIAN THEATER IN THE EIGHTEENTH CENTURY. Two hours credit. Second semester, by appointment. Lectures and reports. The Commedia dell' Arte. Reading of selected comedies of Goldoni and tragedies of Alfieri. Careful study of a few typical works. Prerequisite, course 34, or its equivalent. Cowper.

131.—EARLY ITALIAN. Three hours credit. Second semester, by appointment. Monaci's *Crestomazia italiana*; d'Ancona and Bacci's *Manuale della letteratura italiana*, vol. I; Rossi's *Storia della letteratura italiana*, vol. I. Prerequisite, course 80, or its equivalent. Cowper.

The following course is open to undergraduates also (for description, see College section).

180.—DANTE. Three hours credit. First semester, by appointment. Cowper.

SOCIOLOGY.

Professor: BLACKMAR.

Associate Professors: HELLEBERG, DEACON (Medical School).

Assistant Professor: ELMER.

Instructor: BODENHAFFER.

100.—SEMINAR OF SOCIOLOGY. Two to ten hours credit. Either semester, by appointment. This is a research course for advanced students. Applicants for admission to the seminar must satisfy the instructors of their preparation and ability to undertake original investigation. Each student may pursue a definite line of work under the direction of one of the instructors. Helleberg.

101.—SEMINAR OF SOCIAL INVESTIGATION. Two to six hours credit. By appointment. A research course for advanced students. Applicants for admission to the seminar must satisfy the instructor of their preparation and ability to undertake original investigation. Each student may pursue a special line of social investigation. Blackmar.

102.—AMERICAN AND EUROPEAN CHARITIES. Five hours credit. By appointment. Research course. A study of charities administration in the United States and some of the principal cities of Europe. Personal investigation of American charitable institutions, with special reference to methods of state control. Bodenhafer.

103.—PREPARATION FOR INSTITUTIONAL AND SOCIAL SERVICE. Five hours credit. Second semester, by appointment. A study of the administration of charitable, penal, and social institutions. A research course in the library is supplemented by investigation of institutions by visitation. Lectures by experienced officials. Preparation for special positions. Bodenhafer and Elmer.

104.—CRIMINOLOGY. Five hours credit. Second semester, by appointment. The modern theories of criminality. Case-study of the life history of criminals. A critical analysis of methods of classification and reformation. Bodenhafer.

105.—EUGENICS. Three hours credit. Second semester, by appointment. A study of the agencies under social control that may improve or impair racial qualities, either mentally, morally, or physically. Organic evolution, genetics, or heredity is a prerequisite for this course. Zoölogy 4, 64, or 72 would be sufficient. Open to Seniors by special permission of Dean of the College and instructor. Blackmar.

150.—ELEMENTS OF SOCIOLOGY. Two hours credit. First and second semester. Open to students who do not major in sociology. Blackmar.

151.—PRINCIPLES OF APPLIED SOCIOLOGY. Three hours credit. Second semester. Elmer.

- 152.—SOCIAL PATHOLOGY. Two hours credit. First semester. Bodenhafer.
- 153.—REMEDIAL AND CORRECTIVE AGENCIES. Two hours credit. Second semester. Bodenhafer.
- 154.—PUBLIC OPINION.—Three hours credit. Second semester. Helleberg.
- 155.—PSYCHOLOGICAL SOCIOLOGY. Five hours credit. First semester. Helleberg.
- 156.—THE FAMILY. Two hours credit. Second semester. Helleberg.
- 157.—SOCIALISM. Two hours credit. First semester. Helleberg.
- 158.—GENERAL ANTHROPOLOGY. Two hours credit. First semester. Blackmar.
- 159.—ETHNOLOGY. Two hours credit. Second semester. Blackmar.
- 160.—RURAL SOCIOLOGY. Two hours credit. Second semester. Elmer.
- 161.—CONTEMPORARY SOCIETY IN THE UNITED STATES. Three hours credit. First semester. Helleberg.
- 162.—DEVELOPMENT OF SOCIAL THEORY. Five hours credit. Second semester. Helleberg.
- 163.—SOCIAL SURVEYS. Two hours credit. First semester. Elmer.
- 164.—MUNICIPAL SOCIOLOGY. Two hours credit. First semester. Elmer.
- 165.—IMMIGRATION AND RACE PROBLEMS IN THE UNITED STATES. Three hours credit. First semester. Elmer.
- 166.—VITAL STATISTICS. One hour credit. Second semester. Deacon.

ZOOLOGY.

Professor: ALLEN.

Associate Professor: BAUMGARTNER.

Assistant Professors: ROBERTSON, NOWLIN, DOUTHITT.

100.—SEMINAR. Students working for a degree with the major in the department of zoölogy will register in this course for credit in work done in preparation for their theses. Credit will be given only upon a satisfactory presentation of the subject matter of the thesis before the department Faculty.

101.—PROBLEMS IN MORPHOLOGICAL ZOÖLOGY. Five or ten hours credit. Throughout the year. Baumgartner.

102.—PROBLEMS IN SYSTEMATIC AND DESCRIPTIVE ZOÖLOGY. Five or ten hours credit. Throughout the year. Douthitt.

103.—PROBLEMS IN HISTOLOGY AND CELLULAR BIOLOGY. Five or ten hours credit. Throughout the year, by appointment. Baumgartner.

104.—PROBLEMS IN VERTEBRATE PALEONTOLOGY. Five or ten hours credit. Throughout the year, by appointment. Douthitt.

105.—PROBLEMS IN EMBRYOLOGY. Five or ten hours credit. Throughout the year, by appointment. Allen.

106.—PROBLEMS IN GENETICS. Five or ten hours credit. Throughout the year, by appointment. Robertson.

107.—PROBLEMS IN PROTOZOÖLOGY. Five or ten hours credit. Throughout the year, by appointment. Nowlin.

108.—PROBLEMS IN PARASITOLOGY. Five or ten hours credit. Throughout the year, by appointment. Allen.

- 109.—PROBLEMS IN CYTOLOGY. Five or ten hours credit. Throughout the year, by appointment. Robertson.
- 150.—SYSTEMATIC ZOÖLOGY. Five or ten hours credit. Throughout the year. Douthitt.
- 151.—ORNITHOLOGY. Three hours credit. Second semester, by appointment. Douthitt.
- 152.—STUDY OF THE MAMMALS. Two hours credit. Second semester, by appointment. Douthitt.
- 153.—ANIMAL HISTOLOGY, OR MICROSCOPIC ANATOMY. Five hours credit. First semester. Baumgartner.
- 154.—THE CELL. Five hours credit. First semester. Robertson.
- 155.—EMBRYOLOGY. Five hours credit. Second semester. Allen.
- 156.—VERTEBRATE PALEONTOLOGY. Five hours credit. Second semester. Douthitt.
- 157.—PARASITOLOGY. Three hours credit. First semester. Allen.
- 159.—ECONOMIC ORNITHOLOGY AND MAMMALOGY. Five hours credit. Throughout the year, by appointment. Douthitt.
- 171.—PROTOZOÖLOGY. Five hours credit. First semester. Nowlin.
- 172a.—GENETICS. Three hours credit. Second semester. Robertson.
- 172b.—ANIMAL BREEDING. Two hours credit. Second semester. Robertson.
- 173.—ZOÖLOGICAL CONFERENCE. One hour credit. Both semesters, by appointment. Graduate and advanced undergraduate students meet with the instructors for the discussion of current zoölogical problems. Reports on assigned subjects.

SECTION III.

College of Liberal Arts and Sciences.

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FACULTY.

FRANK STRONG, Ph. D., President.
OLIN TEMPLIN, A. M., Dean and Professor of Philosophy.
EPHRAIM MILLER, Ph. D., Emeritus Professor of Mathematics and Astronomy.
EDGAR H. S. BAILEY, Ph. D., Professor of Chemistry and Metallurgy.
ALEXANDER M. WILCOX, Ph. D., Professor of Greek.
LUCIUS E. SAYRE, Ph. M., Professor of Pharmacy.
FRANK W. BLACKMAR, Ph. D., Professor of Sociology.
CHARLES G. DUNLAP, Litt. D., Professor of English Literature.
EDWIN M. HOPKINS, Ph. D., Professor of Rhetoric and English Language.
FRANK H. HODDER, Ph. M., Professor of American History and Political Science.
ERASMUS HAWORTH, Ph. D., Professor of Geology.
ARTHUR T. WALKER, Ph. D., Professor of Latin Language and Literature.
WILLIAM C. STEVENS, M. S., Professor of Botany.
WILLIAM A. GRIFFITH, Professor of Drawing.
EUGENIE GALLOO, A. M., Professor of Romance Languages and Literatures.
CHARLES S. SKILTON, A. B., Professor of Musical Theory.
IDA H. HYDE, Ph. D., Professor of Physiology.
JAMES NAISMITH, M. D., Professor of Physical Education.
SAMUEL J. HUNTER, A. M., Professor of Entomology.
FREDERICK E. KESTER, Ph. D., Professor of Physics.
HAMILTON P. CADY, Ph. D., Professor of Chemistry.
MERLE THORPE,* A. B., Professor of Journalism.
JOHN SUNDWALL, Ph. D., Professor of Anatomy.
FREDERICK H. BILLINGS, Ph. D., Professor of Bacteriology.
BENNET M. ALLEN, Ph. D., Professor of Zoölogy.
EDMUND H. HOLLANDS, Ph. D., Professor of Philosophy.
SAMUEL A. MATTHEWS, M. D., Professor of Physiology.
FRANK B. DAINS, Ph. D., Professor of Chemistry.
ELMER F. ENGEL, A. M., Professor of German.
JOHN N. VAN DER VRIES, Ph. D., Professor of Mathematics.
ARTHUR MACMURRAY, A. B., Professor of Public Speaking.
ELIZABETH C. SPRAGUE, Professor of Home Economics.
R. D. O'LEARY, A. B., Professor of English.
ARTHUR J. BOYNTON, A. M., Professor of Economics.
CHARLES H. ASHTON, Ph. D., Professor of Mathematics.
HENRY C. THURNAU, Ph. D., Professor of German.
FREDERICK R. HAMILTON, Ph. D., Director University Extension Division.
DAVID L. PATTERSON, B. S., Assistant Dean and Professor of European History.
WILLIAM A. WHITAKER, A. M., Professor of Metallurgy.
LEON N. FLINT, A. B., Professor of Journalism.

* Absent on leave, 1916-'17.

- GEORGE E. COGHILL, Ph. D., Professor of Anatomy.
 O. O. STOLAND, Ph. D., Professor of Physiology.
 WALTER S. HUNTER, Ph. D., Professor of Psychology.
 MILES W. STERLING, A. M., Associate Professor of Greek.
 HANNAH OLIVER, A. M., Associate Professor of Latin.
 SELDEN L. WHITCOMB, A. M., Associate Professor of English Literature.
 MARTIN E. RICE, M. S., Associate Professor of Physics.
 CLARENCE A. DYKSTRA, A. B., Associate Professor of History.
 LOUIS E. SISSON, A. M., Associate Professor of Rhetoric.
 ALBERTA L. CORBIN, Ph. D., Associate Professor of German.
 WILLIAM J. BAUMGARTNER, A. M., Associate Professor of Zoölogy.
 HENRY O. KRUSE, A. M., Associate Professor of German.
 CLARENCE C. CRAWFORD, Ph. D., Associate Professor of European History.
 EARL W. MURRAY, A. B., Associate Professor of Latin.
 WILLIAM S. JOHNSON, Ph. D., Associate Professor of English Language.
 VICTOR E. HELLEBERG, A. B., Associate Professor of Sociology.
 MARGARET LYNN,* A. M., Associate Professor of English Literature.
 ELISE NEUEN SCHWANDER, Ph. D., Associate Professor of Romance Languages.
 ARTHUR L. OWEN, A. M., Associate Professor of Romance Languages.
 HERMAN C. ALLEN, Ph. D., Associate Professor of Chemistry.
 WILLIAM W. DAVIS, Ph. D., Associate Professor of American History and Political Science.
 ALICE L. GOETZ,* M. D., Associate Professor of Physical Education.
 CHARLES A. SHULL, Ph. D., Associate Professor of Botany.
 ULYSSES G. MITCHELL, Ph. D., Associate Professor of Mathematics.
 CARL F. NELSON,* Ph. D., Associate Professor of Physiological Chemistry.
 GEORGE E. PUTNAM, B. Litt., Associate Professor of Economics.
 FLOYD C. DOCKERAY, Ph. D., Associate Professor of Psychology.
 JOSEPH G. BRANDT, Ph. D., Associate Professor of Greek.
 NOBLE P. SHERWOOD, A. M., Associate Professor of Bacteriology.
 DOROTHY CHILD, A. B., M. D., Dr. P. H., Associate Professor of Physical Education.
 EDWIN F. STIMPSON, B. S., Assistant Professor of Physics.
 JAMES E. TODD, A. M., Assistant Professor of Geology and Mineralogy.
 EDWARD M. BRIGGS,* A. M., Assistant Professor of German.
 ALBERT M. STURTEVANT, Ph. D., Assistant Professor of German.
 LULU GARDNER, A. B., Assistant Professor of Rhetoric.
 CALVERT J. WINTER,* Ph. B., Assistant Professor of Romance Languages.
 CLIFFORD C. YOUNG, A. B., Assistant Professor of Chemistry.
 ARTHUR MITCHELL, Ph. D., Assistant Professor of Philosophy.
 FREDERICK A. G. COWPER, A. M., Assistant Professor of Romance Languages.
 WILLIAM R. B. ROBERTSON, Ph. D., Assistant Professor of Zoölogy.
 THEODORE T. SMITH, A. M., Assistant Professor of Physics.
 HERBERT B. HUNGERFORD,* A. M., Assistant Professor of Entomology.
 PAUL V. FARAGHER, Ph. D., Assistant Professor of Chemistry.
 EDMUND D. CRESSMAN, Ph. D., Assistant Professor of Latin.
 MARK SKIDMORE, A. M., Assistant Professor of Romance Languages.

* Absent on leave, 1916-'17.

WALTER S. LONG, A. M., Assistant Professor of Chemistry.
 NADINE NOWLIN, A. M., Assistant Professor of Zoölogy.
 HERMAN DOUTHITT, Ph. D., Assistant Professor of Zoölogy.
 GEORGE W. STRATTON, Ph. D., Assistant Professor of Chemistry.
 ELLIS B. STOUTER, Ph. D., Assistant Professor of Mathematics.
 WILLIAM M. DUFFUS, A. M., Assistant Professor of Economics.
 GRACE M. CHARLES, Ph. D., Assistant Professor of Botany.
 BENJAMIN J. CLAWSON,* A. M., Assistant Professor of Bacteriology.
 BLAINE F. MOORE, Ph. D., Assistant Professor of Political Science.
 JOSEPHINE M. BURNHAM, Ph. D., Assistant Professor of English.
 JOHN W. EVANS, A. B., Assistant Professor of Journalism.
 FRANK E. MELVIN, Ph. D., Assistant Professor of Modern European History.
 FREDERICK W. BRUCKMILLER, A. M., Assistant Professor of Chemistry.
 ROSE R. MORGAN, A. M., Assistant Professor of Rhetoric.
 AMIDA STANTON, A. M., Assistant Professor of Romance Languages.
 HELEN G. JONES, A. M., Assistant Professor of German.
 HARRY V. E. PALMBLAD, A. M., Assistant Professor of German.
 MANUEL C. ELMER, Ph. D., Assistant Professor of Sociology.
 RAYMOND C. MOORE, Ph. D., Assistant Professor of Geology and Paleontology.
 WINTHROP P. HAYNES, Ph. D., Assistant Professor of Geology and Mineralogy.
 CHARLES B. HARRISON, A. B., Assistant Professor of Physical Education.
 JOHN ISE, Ph. D., Assistant Professor of Economics.
 SAMUEL O. RICE, Assistant Professor of Journalism.
 ROBERT M. WOODBURY, Ph. D., Assistant Professor of Economics.
 HARRY D. HARPER, A. M., Assistant Professor of Economics.
 LALIA V. WALLING, A. M., Instructor in Physiology.
 ESTHER WILSON, A. M., Instructor in German.
 MAY GARDNER, A. B., Instructor in Romance Languages.
 ALICE WINSTON, A. M., Instructor in Rhetoric.
 MARIA L. BENSON, Instructor in Design and Ceramics.
 HEARTY E. BROWN,* A. M., Instructor in Rhetoric.
 SARA G. LAIRD, A. M., Instructor in Rhetoric.
 JOHN B. WHELAN, A. M., Instructor in Chemistry.
 EVANGELINE DOWNEY TEETOR, A. M., Instructor in Home Economics.
 HELEN R. HOOPES, A. M., Instructor in Rhetoric.
 CAROLINE B. SPANGLER, A. B., Instructor in German.
 WILLARD A. WATTLES, A. M., Instructor in Rhetoric.
 ESTHER L. SWENSON, A. M., Instructor in Rhetoric.
 MARGARETHE C. HOCHDÖRFER, A. M., Instructor in German.
 IVAN P. PARKHURST, B. S., Instructor in Chemistry.
 WINFRED W. HAWKINS, A. M., Instructor in German.
 HAZEL K. ALLEN, Ph. B., Instructor in Home Economics.
 ARTHUR W. LARSEN, A. M., Instructor in Mathematics.
 HERBERT FLINT, A. B., Instructor in Rhetoric.
 HAZEL H. PRATT, A. B., Instructor in Physical Education.

* Absent on leave, 1916-'17.

LEONARD L. STEIMLEY, A. M., Instructor in Mathematics.
 LAURENS E. WHITTEMORE, A. M., Instructor in Physics.
 OSCAR L. MAAG, B. S., Instructor in Chemistry.
 CLIFFORD W. SEIBEL, B. S., Instructor in Chemistry.
 AVIS GWINN, A. B., Instructor in Home Economics.
 WALTER B. BODENHAFFER, A. M., Instructor in Sociology.
 PETER A. F. APPELBOOM, Instructor in Romance Languages.
 PETER W. CLAASSEN, A. M., Instructor in Entomology.
 FRANK B. THAYER, A. M., Instructor in Journalism.
 ODIS H. BURNS, A. B., Instructor in Public Speaking.
 JAY M. MILLIGAN, A. B., Instructor in Bacteriology.
 DONALD G. PATERSON, A. M., Instructor in Psychology.
 ANNA G. SABY, A. M., Instructor in Romance Languages.
 EARLE B. MILLER, A. M., Instructor in Mathematics.
 MARION K. FORWARD, Ph. B., Instructor in Rhetoric.
 MILES L. HANLEY, A. M., Instructor in Rhetoric.
 JAMES D. MCCALLUM, A. M., Instructor in Rhetoric.
 ARTHUR J. MIX, Ph. D., Instructor in Plant Pathology.
 SANTIAGO GUTIÉRREZ, Instructor in Romance Languages.
 RODOLPHE O. HOFFMAN, Instructor in Romance Languages.
 DANIEL DA CRUZ, Ph. D., Instructor in Romance Languages.
 JESSIE J. SCHINDLER, A. M., Instructor in Rhetoric.
 BERTHA MIX, A. B., Instructor in Physical Education.
 LARRY M. PEACE, A. M., Preparator and Demonstrator in the Botanical
 Laboratory.
 WILLIAM B. BROWN, Assistant Instructor in Journalism.
 KATE SEARS, Assistant Instructor in Botany.
 WENDELL M. LATIMER, A. B., Assistant Instructor in Chemistry.
 RAY Q. BREWSTER, A. M., Assistant Instructor in Chemistry.
 AVIS TALCOT, A. B., Assistant Instructor in Chemistry.
 EARL C. O'ROKE, A. B., Assistant Instructor in Zoölogy.
 EMILY V. BERGER, A. B., Assistant Instructor in Chemistry.
 KATE DAUM, A. M., Assistant Instructor in Home Economics.
 SYBIL WOODRUFF, A. B., Assistant Instructor in Home Economics.
 JESSIE L. WRIGHT, Laboratory Assistant in Home Economics.
 PAUL B. LAWSON, A. B., Assistant Instructor in Entomology.
 AGNES A. MURRAY, A. M., Assistant Instructor in Chemistry.
 HAROLD L. LENTZ, A. B., Assistant Instructor in Chemistry.
 ROLLA N. HARGAR, A. B., Assistant Instructor in Chemistry.
 J. D. M. CROCKETT, Lecturer on Accounting.
 S. HERBERT HARE, M. L. A., Lecturer on Landscape and Garden Design.

ADMINISTRATIVE COMMITTEE.

OLIN TEMPLIN, *Chairman.*

W. A. WHITAKER.

A. J. BOYNTON.

D. L. PATTERSON.

JAMES NAISMITH.

E. W. MURRAY.

B. M. ALLEN.

U. G. MITCHELL, *Secretary.*

The College of Liberal Arts and Sciences.

The College was the first school of the University to be organized. From its opening in 1866 it has offered to its students four years of liberal training, leaving in the main the development of the applied arts and sciences to the professional schools that have grown up around it.

DEGREES.

Graduates of the College who have completed the regular College course are admitted to the degree of *Bachelor of Arts*, except that, upon request, any candidate who has met the requirements for that degree will be admitted to the degree of *Bachelor of Science* instead; provided, the larger part of his work has been elected in science departments; and provided further, his application has the sanction of the department in which his major work has been done. Those who have completed two years of College work and two years in the School of Medicine are admitted to the degree of Bachelor of Science in Medicine.

ADMISSION.

By act of the state legislature all graduates of accredited high schools in Kansas are admitted to the Freshman class without examination or condition.

Candidates for admission who are not graduates of accredited Kansas high schools must offer, either on examination or satisfactory certificate, fifteen units from the following list:

ENGLISH.—Rhetoric and English literature, 3 or 4 units. Three units required.

MATHEMATICS.—Elementary algebra, $1\frac{1}{2}$ units; plane geometry, 1 unit; solid geometry, $\frac{1}{2}$ unit; plane trigonometry, $\frac{1}{2}$ unit; advanced algebra, $\frac{1}{2}$ unit. Elementary algebra and plane geometry are required.

FOREIGN LANGUAGE.—Latin, 1, 2, 3 or 4 units; Greek, 1, 2, 3 or 4 units; German, 1, 2, 3 or 4 units; French, 1, 2, 3 or 4 units; Spanish, 1 or 2 units. Three units in one language, or two units in one language and one unit in another, are required.

PHYSICAL SCIENCES.—Physical geography, 1 or $\frac{1}{2}$ unit; physics, 1 unit; chemistry, 1 unit. One unit required.

BIOLOGICAL SCIENCES.—Botany, 1 unit; zoölogy, 1 unit; physiology, 1 or $\frac{1}{2}$ unit; biological science, 1 unit. One unit required.

HISTORY AND SOCIAL SCIENCE.—Greek and Roman history, 1 unit; medieval and modern history, 1 unit; English history, 1 unit; American history, 1 unit; economics, 1 or $\frac{1}{2}$ unit; civics, $\frac{1}{2}$ unit. One unit required.

MISCELLANEOUS.—Psychology, $\frac{1}{2}$ unit; methods of teaching and school management, $\frac{1}{2}$ unit; commercial law, $\frac{1}{2}$ unit; bookkeeping, $\frac{1}{2}$ unit; drawing, 1 unit; woodwork, 1 unit; forging, 1 unit; domestic science, 1 unit; domestic art, 1 unit; agriculture, $\frac{1}{2}$ or 1 unit; music, 1 unit. Not more than three units are accepted.

Any candidate from another state will be accepted on certificate, provided he is eligible to admission to the state university in that state, and provided he has completed the subjects required for graduation from an accredited Kansas high school.

Entrance Examinations.

Candidates for admission who are not graduates of accredited Kansas high schools may offer themselves for examination in the entrance subjects above specified. A schedule of these examinations will be found on page 51 of Section I, "General Information."

Advanced Standing.

Credit for work of collegiate or professional standing is granted only on recommendation of the Advanced Standing Committee.

For regulations governing the granting of such credit see Admission to Advanced Standing, Section I, page 50.

Special Students.

Persons of maturity and of serious purpose, who are not candidates for the College degree and who present satisfactory reasons for asking such exceptional consideration, may be admitted to the College as special students, subject to the provisions stated below:

Any one regularly enrolled in another school of the University may be admitted as a special student to College classes, but all applications for such enrollment must be accompanied by the recommendation of the dean of the school concerned. Such students are subject to the same regulations as other special students.

Each candidate for admission as a special student must personally file with the Faculty Committee an application stating his reasons for his request, and must submit credentials from schools previously attended showing character and extent of preparation for the classes to which he desires admission. He must also submit to such examination as the committee or the departments concerned may prescribe. This application must be renewed each semester.

The Faculty Committee, subject to the approval of instructors or heads of departments concerned, will determine what courses the candidate is prepared to pursue with profit, and will outline his program of studies for the semester. The Registrar will register a special student only upon the authorization of the Faculty Committee.

Special students are subject to the general regulations regarding prerequisites, number of hours, attendance, examinations, quality of work, etc. Failure in any course, or a low grade in previous work, may be considered sufficient ground for refusal to allow subsequent enrollment as a special student.

The Dean may withdraw the privileges of any special student who, in his judgment, is failing to comply with the spirit of the foregoing provisions.

If a special student later becomes a candidate for a degree, the credits he has received while enrolled as a special student will not be allowed to count towards this degree, except by the approval of the Faculty.

Extension Division Credits.

College students may offer towards the degree not to exceed sixty hours of credit received for work done in the Extension Division, but such credits will not be placed on their College record until thirty hours have been completed in residence.

All regulations governing the election of courses and final residence must have been observed by the candidate for the degree.

REGISTRATION.

All candidates for admission having certificates from schools accredited by the State Board of Education and all students of the University intending to pursue their studies during the ensuing year must present themselves for registration at the University on September 17, 18, 19. *Registration at a later date will be permitted only on the payment of a fee of one dollar.*

ENROLLMENT.

After registration has been completed with the Registrar, and fees have been paid, students should apply to the Dean for enrollment in their classes. Enrollment the first semester occurs September 18 and 19, and

on the first day of the second semester. *Enrollment at a later date will be permitted only on the payment of a fee of one dollar.*

Each student is assigned to a member of the Faculty as his personal adviser, who will assist him in the selection of courses, the arrangement of his schedule, and any other matters upon which he may need assistance or advice. The Faculty adviser is the assistant and representative of the Dean of the College, who is charged with the execution of all rules relating to enrollment.

COMPLETION OF REQUIREMENTS. A student may not be enrolled in any subject in advance of any other which, for any reason, he has yet to take, and which is listed in the schedule.

A student desiring enrollment in courses which presuppose certain subjects which he has not completed in the preparatory school must first make good such preliminary training within a high school or under a tutor authorized by the department concerned.

FAILURES AND CONDITIONS. If the record of a student shows that he has failed in a course, or if he has received a condition which has not been removed during the previous semester, he must reënroll in the course, if it is listed in the schedule.

THE CREDIT HOUR.

For each credit hour of any course in the College the student is expected to devote himself for three hours, either in the classroom, laboratory, or outside preparation.

SCHOLARSHIPS.

For information in regard to scholarships and aid funds available for College students, reference is made to page 54 of section I, "General Information."

FEES AND EXPENSES.

For information in regard to fees and expenses reference is made to page 52, Section I, "General Information." All course fees must be paid before enrollment in classes will be permitted.

THE CURRICULUM.

DEPARTMENTS OFFERING COURSES IN THE COLLEGE.

<i>Group.</i>	<i>Department.</i>
I. <i>English.</i>	English Language and Literature. Journalism. Public Speaking.
II. <i>Ancient Language.</i>	Greek Language and Literature. Latin Language and Literature.
III. <i>Modern Language.</i>	Germanic Languages and Literatures. Romance Languages and Literatures.
IV. <i>Mathematics.</i>	Mathematics.
V. <i>Physical Science.</i>	Chemistry. Physics and Astronomy. Geology and Mineralogy.
VI. <i>Biological Science.</i>	Botany. Zoölogy. Entomology. Physiology. Bacteriology. Anatomy.
VII. <i>History.</i>	History and Political Science. Economics and Commerce. Sociology.
VIII. <i>Philosophy.</i>	Philosophy and Psychology.
IX. <i>Miscellaneous.</i>	Home Economics. Physical Education. Design. Music.
X. <i>Professional.</i>	Law (fifteen hours, open to College Seniors). Medicine. (See Medicine under "Description of Courses.") Engineering (fifteen hours, open to College students). Education (fifteen hours, open to College students). Fine arts (fifteen hours, open to College Juniors and Seniors).

REGULATIONS GOVERNING THE ELECTION OF COURSES.

In the choice of courses from these groups and departments the student must conform to the following regulations:

FRESHMAN-SOPHOMORE REQUIREMENTS. During the first semester every Freshman must attend a weekly lecture on hygiene, and spend three hours a week in the gymnasium. During the second semester he must spend three hours a week in the gymnasium.

During the entire year every Sophomore must spend two hours a week in the gymnasium.

Before the beginning of the Junior year the student must have completed sixty hours, chosen from the list of courses open to Freshmen and Sophomores in accordance with the following requirements:

a. At least five hours must be taken from each of six of the first eight groups.

b. Not more than twenty hours may be taken in one department.

c. Rhetoric, five hours, must be taken by all Freshmen not offering it as a fourth year of entrance English. Credits for rhetoric are given provisionally. (See announcement of course.)

d. Freshmen and Sophomores *may not carry more than ten hours in one group at one time.*

JUNIOR-SENIOR REQUIREMENTS. The work of the Junior and Senior years must include a minimum of sixty hours, chosen from the courses offered by the various departments, but not more than twenty hours may be in courses open to either Freshmen or Sophomores.

Juniors and Seniors *may carry not more than twelve hours in one group at one time.*

THE LAST THIRTY HOURS MUST BE DONE IN RESIDENCE.

MAJOR REQUIREMENTS. Before graduation the student must complete a major course of not less than twenty hours nor more than forty hours in one department, and not less than thirty hours nor more than sixty hours in the group including the major department. At least twelve hours of work in satisfaction of the department major requirements must be in courses not open to Freshmen or Sophomores.

The courses constituting a departmental major must be chosen under the supervision of the Faculty of the department concerned.

In the selection of a major the School of Medicine is considered a department.

FREE ELECTIVES. The work required for graduation not included in the major course is to be chosen subject to the restrictions that not more than twenty-five hours may be in any department, and not more than forty hours may be in any group other than the one in which the major course is elected.

RULE FOR STUDENTS HAVING ADVANCED CREDITS. Students who have been granted advanced credits shall so select their studies that in the one hundred twenty hours offered for the degree the regulations governing the distribution of work shall be satisfied so far as possible; provided, that advanced credit in excess of the maximum prescribed for majors and minors may be granted the candidate at the time of his matriculation. Students admitted to Junior standing with a deficiency must meet the requirements respecting studies of the first two years only to the extent of their deficiency.

AMOUNT OF WORK TO BE CARRIED AT ONE TIME. Students of the College must be enrolled in not less than fourteen nor more than eighteen hours of work, including Hygiene and Gymnasium, but all applications for enrollment are subject to the approval of the Dean. When the past record or current work of a student indicates that he is unable to carry advantageously the amount of work permitted by the above regulation, he may be limited in his enrollment to such extent as may be considered advisable in his case. The Faculty urges students to confine themselves to the average number of fifteen hours of class work, and thus devote four full years to the completion of their undergraduate work. Experience has shown that the crowding of the undergraduate courses results in serious loss in the quality of the work accomplished.

DUPLICATION OF COURSES. No course may be chosen which substantially duplicates work for which credit has already been granted, either in the College or preparatory school.

AMOUNT OF WORK REQUIRED FOR GRADUATION. In order to be an applicant for a degree from the College of Liberal Arts and Sciences a student must complete 120 hours of class work, in addition to required hygiene in the Freshman year and required gymnasium work in the Freshman and Sophomore years.

STUDENT'S RESPONSIBILITY. The individual student will be held responsible for the election of his courses in conformity with the preceding regulations.

PROPORTION OF HIGH GRADES REQUIRED FOR THE DEGREE. A student in order to be accepted as a candidate for the degree must have received a grade of I or II in at least eighty hours. Any student admitted to advanced standing will be accepted as a candidate for the degree only in case such student has received on work done in residence, and also for the work on which advanced credits have been granted, considered separately, the proportion of high grades provided in the foregoing regulation. Any student in residence at the time of the adoption of this regulation will be accepted as a candidate for the degree only in case such student has received on the work done subsequent to its adoption the proportion of high grades provided in the foregoing regulation.

COLLEGE CREDIT FOR PROFESSIONAL COURSES.

Juniors and Seniors in the College are permitted to enroll in certain courses offered in the professional schools and count the credit received for such work towards the bachelor of arts degree, *but no student is permitted to offer credit from more than one professional school.* The amount of credit that may be thus used is subject to the limitations indicated below. Students desiring to avail themselves of this opportunity must register in the professional school as well as in the College, but in enrollment the regulations of the College Faculty governing quantity and character of courses elected must be observed.

SCHOOL OF LAW.—Seniors in the College may offer fifteen hours from certain courses in the curriculum of the School of Law. See Section VI.

SCHOOL OF EDUCATION.—Students in the College may elect not to exceed fifteen hours from certain courses in the School of Education. See Section IX.

SCHOOL OF ENGINEERING.—A maximum of fifteen hours may be elected by the College student from certain courses offered in the School of Engineering. See Section IV.

SCHOOL OF FINE ARTS.—Juniors and Seniors in the College may be enrolled in not to exceed fifteen hours of certain courses in the School of Fine Arts. See Section V.

SCHOOL OF MEDICINE.—For conditions of election of courses in the School of Medicine. See Section VIII.

DESCRIPTION OF COURSES.*

ANATOMY.

Professors: SUNDWALL (head of department), COGHILL.

1.—INTRODUCTORY ANATOMY. Five hours credit. First semester, 8:30 to 10:30. A course on the structure of the human body especially for those students who are not preparing for medicine. Sundwall.

50.—HUMAN ANATOMY I. Five hours credit. First semester. This course is identical with that of the first semester of the medical curriculum, to which reference is made for complete description. Sundwall.

51.—HUMAN ANATOMY II. Five hours credit. Second semester. A continuation of course 1. Sundwall.

54.—HISTOLOGY. Five hours credit. First semester. This course is identical with that of the first semester of the medical curriculum, to which reference is made for complete description. Coghill.

55.—NEUROLOGY. Three hours credit. Second semester. This course is identical with that of the medical curriculum, to which reference is made for complete description. Coghill.

ASTRONOMY.

(See Physics and Astronomy.)

BACTERIOLOGY.

Professor: BILLINGS (Head of Department).

Associate Professor: SHERWOOD.

Assistant Professors: CLAWSON, YOUNG.

Instructor: MILLIGAN.

EQUIPMENT. The laboratories are provided with sterilizers, incubators, refrigerators, centrifuges, glassware, etc. A compound microscope with high-power lens, a set of stains, and other equipment are allotted each student. The Water Survey laboratory is equipped for both bacteriological and chemical investigation, and is available to a few well-prepared research students by special arrangement.

ADVICE AS TO CHOICE OF COURSES. Course 1, course 50, or course 51 is a prerequisite for all subsequent courses in bacteriology. Each is directly concerned with the application of bacteriology to human problems. Students who plan to study bacteriology with the expectation of teaching the subject, or of entering a public-health laboratory, should complete the following courses in other departments: Inorganic chemistry, qualitative analysis, organic chemistry, chemical analysis of foods, chemical water analysis, quantitative analysis, physiological chemistry, general morphology of plants, plant physiology, elementary zoölogy, animal histology, parasitology, protozoölogy, German (15 hours), human anatomy, medical physiology, and pathology.

Students expecting to go into medicine should not fail to enter the section of general bacteriology that is prescribed for medical students.

* NUMBERS OF COURSES. Courses with numbers from 1 to 49 are open to Freshmen and Sophomores; courses marked with an asterisk (*) are reserved for Sophomores; courses marked with a double asterisk (**) are required of Freshmen.

Courses with numbers from 50 to 99 are open to Juniors and Seniors on the conditions stated in each case. Many of these courses are also open to graduate students; these are listed under the Graduate School, with numbers increased by 100.

* DAYS OF MEETING. Courses giving five hours credit meet daily from Monday to Friday, inclusive.

Courses giving three hours credit meet on Monday, Wednesday and Friday, unless otherwise specified.

Courses giving two hours credit meet on Tuesday and Thursday, unless otherwise specified.

See the announcement of the department of bacteriology in the School of Medicine.

50.—GENERAL BACTERIOLOGY. Five hours credit. Both semesters; first semester, 10:30 to 12:30 and 1:30 to 3:30; second semester, 8:30 to 10:30 and 10:30 to 12:30. Lectures and laboratory work. The lectures are largely illustrated and treat problems connected with general bacteriology and with the relation of bacteria to public health. Laboratory work deals with the preparation of media, cultural and staining methods, diagnostic tests, and the examination of bacteria that bear some relation to everyday life. Prerequisite, chemistry 1 or equivalent. Fee, \$5.

Billings, Sherwood, and Milligan.

51.—GENERAL BACTERIOLOGY AND WATER ANALYSIS. Five hours credit. First semester, 8:30 to 10:30. The first part of the semester will be devoted to general bacteriological technic, followed by examination of water and sewage. The remainder of the time will be spent in quantitative chemical analysis of water and sewage and in the proper interpretation of sanitary tests. Designed for sanitary engineers, but open to other students only by special permission. Prerequisite, chemistry 3. Fee, \$3.

Young.

53.—BACTERIOLOGY OF FOODS. Five hours credit. Second semester, 1:30 to 3:30. Examination of milk, oysters, meats, etc., with supplementary lectures. Fee, \$5.

Milligan.

54.—SPECIAL METHODS IN BACTERIOLOGY. Five hours credit. First semester, 10:30 to 12:30. The laboratory work embraces the use of special media, the preparation of vaccines, and diagnostic technic, such as that used in public health laboratories. Methods in sanitary examination of water constitute part of the course. Fee, \$5.

Sherwood.

55.—BACTERIOLOGY OF SOILS. Two hours credit. Second semester, 1:30 to 3:30. A laboratory study of the influence exerted by bacteria on the composition of soils. Fee, \$2.

Milligan.

56.—ADVANCED WATER ANALYSIS. Three hours credit. Second semester, 8:30 to 10:30. Laboratory study and assigned reading. Special attention is given to the bacteriology of water purification. The course will include a study of the organisms that produce water-borne diseases. Fee, \$3.

Young.

57.—IMMUNOLOGY. Five hours credit. First semester, 10:30 to 12:30. Laboratory study of precipitins, agglutinins, bacteriolysins, and complement fixation. Fee, \$5.

Sherwood.

58.—PATHOGENESIS. Five hours credit. First semester, 8:30 to 10:30. A detailed study of lesions caused by bacteria. Prerequisites, course 50 and animal histology. Offered in 1918-'19. Fee, \$5.

Clawson.

60.—BACTERIOLOGICAL JOURNALS. One hour credit. First semester, by appointment. Reviews and discussions of current bacteriological literature.

Billings.

61.—SPECIAL PROBLEMS IN BACTERIOLOGY. Two to ten hours credit. Both semesters, by appointment. Special work along some definite line with a view of obtaining familiarity with a particular kind of laboratory procedure. Fee, \$1 for each hour of enrollment.

Billings and the instructor concerned.

BOTANY.

Professor: STEVENS (Chairman of Department).
Associate Professor: SHULL.
Assistant Professors: CHARLES, STERLING, MIX.
Assistant Instructor: SEARS.
Preparator and Demonstrator: PEACE.
Lecturer: HARE.

EQUIPMENT. The equipment embraces microtomes, paraffin baths, etc., for histological work, simple and compound microscopes for each student, individual sets of apparatus for physiological experiments, and equipment for advanced work in plant physiology and pathology, a good herbarium for reference in taxonomy, sets of morphological slides for each student, and abundant morphological material. There is a departmental library adjoining the laboratories.

ADVICE AS TO CHOICE OF COURSES. Courses 1 and 2 are elementary in their respective fields and are without prerequisites. Not more than one of these elementary courses should be taken without consultation with the department. Students who are preparing to teach botany should take courses 1 or 51, 2, 3, 4, 50, 52, 60, 61, 62, and bacteriology 50. Courses 1 or 51 and 55 in botany and 50 in bacteriology afford a good basis for sanitation. Courses 3, 60, and 52, and 62 are fundamental to scientific plant culture. Botany 1, and 4 and 61 and bacteriology 50 would be especially useful to students in home economics. Courses 3, 4, 50, 61, and 62 are fundamental to arboriculture, city forestry, and the horticultural side of landscapes and garden design.

1.—**GENERAL MORPHOLOGY OF PLANTS.** Five hours credit. First semester. Lectures and recitations, Tu. Th., at 10:30. Laboratory, M. W. F., 10:30 to 12:30. The evolution of the plant kingdom. Fee, \$1. Charles.

2.—**THE LIVING PLANT.** Five hours credit. Second semester, two divisions, 8:30 to 9:30 and 9:30 to 10:30. What plants reveal about the fundamental problems of life, and their relation to our welfare. Lectures, demonstrations, and recitations. Fee, \$1. Stevens.

3.—**PLANT PHYSIOLOGY.** Five hours credit. Second semester, M. W. F., 10:30 to 12:30; Tu. Th., 11:30 to 12:30. The physiological activities of plants. Intake and outgo of material and energy, photosynthesis, digestion, translocation, storage, assimilation, respiration, excretion, irritability, and tropic responses, etc. Prerequisite, course 1 or its equivalent, or 2. Desirable antecedent, chemistry. Fee, \$1. Shull.

4.—**PLANT HISTOLOGY.** Two hours credit. First semester, Tu. Th., 10:30 to 12:30. A study of plant tissues with special reference to their development and functions; plant products, their origin and physiological and biological significance; histological technique. Laboratory work, recitations and lectures. Prerequisite, course 1 or its equivalent, or 2. Fee, \$1. Stevens.

50.—**SYSTEMATIC BOTANY.** Five hours credit. First semester. Lectures and recitations, Tu. Th., at 9:30. Laboratory, M. W. F., 8:30 to 10:30. Field trips Saturday mornings till November. Classification of flowering plants, with field study of local flora, and preparation of an herbarium. Prerequisite, course 1 or 2, or equivalent. Charles.

51.—**GENERAL MORPHOLOGY OF PLANTS.** Five hours credit. Second semester. Lectures and recitations, Tu. Th., 10:30. Laboratory, M. W. F., 10:30 to 12:30. A survey of the plant kingdom to show its evolution. Desirable antecedent, a beginning course in biological science. Fee, \$1. Charles.

52.—**PLANT GENETICS.** Five hours credit. Second semester, M. W. F., 8:30 to 10:30; Tu. Th., 9:30 to 10:30. The problems of variation, heredity, and the improvement of plants by scientific pedigree methods. Prerequisite, course 1 or 2, and 3. Desirable antecedent, course 60. Fee, \$1. Shull.

53.—PLANT PHYSICS. Five hours credit. First semester, M. W. F., 1:30 to 3:30; Tu. Th., 2:30 to 3:30. A course dealing with the most recent advances in our knowledge of those phases of the plant's activities which are essentially physical. Prerequisites, courses 1 or 2, and 3, and physics 1 or its equivalent. Desirable antecedents, physics 6a and 6b. Open only to Seniors and graduates. Fee, \$1. Shull.

54.—PLANT CHEMICS. Five hours credit. Second semester, M. W. F., 1:30 to 3:30; Tu. Th., 2:30 to 3:30. An advanced course in vegetable metabolism, dealing with recent advances in the chemistry of plant processes. Prerequisite, course 53 or equivalent. Desirable antecedents, chemistry 2 and 4, and biological chemistry 50. Not open to Juniors. Fee, \$1. Shull.

55.—MORPHOLOGY OF ALGÆ. Three or five hours credit. Second semester, by appointment. An advanced course in the algæ with particular attention to life histories, local distribution and relation to water supplies. Prerequisite, course 1 or equivalent. Fee, \$1. Charles.

56.—MORPHOLOGY OF FUNGI. Three hours credit. Second semester, 8:30 to 10:30. Lectures, recitations, and laboratory work on the structure and life histories of fungi, especially those causing plant diseases. Prerequisite, course 1, or equivalent. Fee, \$1. Charles.

57.—MORPHOLOGY OF BRYOPHYTES AND PTERIDOPHYTES. Three or five hours credit. First semester, 1:30 to 3:30. An advanced course on the development and classification of plants of the groups. Lectures and laboratory work. Prerequisite, course 1 or equivalent. Fee, \$1. (Given alternate years. Not given 1917-'18.) Charles.

58.—PROBLEMS IN THE MORPHOLOGY OF SPERMATOPHYTES. Five hours credit. Both semesters, by appointment. A study of the forms and structures of plant members under different environments. Laboratory work, field work, and reading. Fee, \$1. Stevens.

59.—PROBLEMS IN THE MORPHOLOGY OF THALLOPHYTES AND ARCHEGONIATES. Five hours credit. Both semesters, by appointment. A study of the structure, development, or distribution of plants of these groups. Laboratory, field work, and reading. Prerequisite, course 1 or equivalent, and advanced work in the group to be investigated. Charles.

60.—AGRICULTURE. Three hours credit. First semester, 8:30 to 10:30. A course dealing with the scientific principles underlying plant production and soil management. This course should be taken in conjunction with entomology 60. Prerequisites, course 3 and entomology 1, or their equivalents. Fee, \$1. Shull.

61.—TREES AND SHRUBS. Three hours credit. Second semester, M. W. F., 2:30 to 3:30. A study of the nature, planting, and care of the trees and shrubs of especial importance in planting home grounds, streets, and parks. Lectures, reading, and field work. Stevens and Hare.

62.—PLANT PATHOLOGY. Five hours credit. First semester, 3:30 to 5:30. Diseases of cultivated plants, their nature, cause and control. Lectures, recitations, and laboratory work. Prerequisite, course 1 or its equivalent, or 2. Desirable antecedent, course 3. Fee, \$1. Mix.

63.—METHODS IN PLANT PATHOLOGY. Five hours credit. Second semester, 3:30 to 5:30. A study of methods for the control of plant diseases; technique of isolation, culture, and inoculation of plant parasites. Lectures, recitations, laboratory and field work. Prerequisite, course 62 or its equivalent. Fee, \$1. Mix.

64.—PROBLEMS IN PLANT PATHOLOGY. Three to five hours credit. Both semesters, by appointment. Original investigation of problems in plant pathology. Prerequisites, courses 3, 62 or its equivalent, and bacteriology 50. Should be preceded or accompanied by course 63. Open only to Seniors and Graduates. Fee, \$1. Mix.

CHEMISTRY.

Professors: BAILEY (Head of Department), CADY,
DAINS, WHITAKER.
Associate Professor: ALLEN.
Assistant Professors: YOUNG, FARAGHER, STRATTON,
LONG, BRUCKMILLER.
Instructors: WHELAN, PARKHURST, ESTES, MAAG,
SEIBEL, LATIMER, BREWSTER, TALCOTT, BERGER.
Assistant Instructors: HARGER, LENTZ, MURRAY.

EQUIPMENT. The department is well supplied with the necessary and usual apparatus for lecture illustration and demonstration, for laboratory work in the undergraduate courses, together with adequate equipment for effective research work in physical, organic, inorganic, analytical, industrial, and metallurgical chemistry. The liquid-air plant offers somewhat unusual opportunities for investigations at low temperatures. The department possesses a library of 3000 volumes, consisting of the more important sets of periodicals and standard works of reference.

ADVICE AS TO CHOICE OF COURSES. Students desiring to become professional chemists should select courses 1, 2, 3, 51, 61 or 62, 71, and 90. The remainder of the possible forty hours in chemistry should be devoted to the subjects which will best fit each student for his chosen work.

Those desiring to teach should select not less than twenty-five hours, which should include courses 1, 2, 3, 53, 60, 61 or 62, and 80 or 81.

For business or general culture, or as a foundation for work in medicine, botany, zoölogy, geology, mineralogy, or physics, at least 1, 2 and 61 should be studied.

Students majoring in chemistry should have completed ten hours of physics, mathematics through calculus, and elementary courses in German, French, bacteriology, and geology.

The department will gladly confer with students majoring in chemistry and advise them as to choice of courses best adapted to individual needs.

FEES will be charged in the various courses to cover cost of materials, breakage, etc.

1.—**ELEMENTARY CHEMISTRY.** Five hours credit. First semester, 10:30 to 12:30 or 1:30 to 3:30; second semester, 10:30 to 12:30. Recitations, lectures, and laboratory work. Students presenting chemistry for admission to the College are not admitted to this course.

Stratton and assistants.

2.—**INORGANIC CHEMISTRY.** Five hours credit. First semester. Lectures and recitations, M. W. F., 8:30 or 9:30. Laboratory, Tu. Th., 8:30 to 10:30 or 1:30 to 3:30. Prerequisite, course 1.

Cady, Faragher, and assistants.

3.—**INORGANIC CHEMISTRY AND QUALITATIVE ANALYSIS.** Five hours credit. Second semester. Lectures and recitations, Tu. Th., 8:30 or 9:30. Laboratory, M. W. F., 8:30 to 10:30 or 1:30 to 3:30. Prerequisite, course 2.

Cady, Faragher, and assistants.

4.—**ELEMENTARY ORGANIC AND SANITARY CHEMISTRY.** Five hours credit. First semester, 10:30 to 12:30. Designed for students preparing for home economics. Not a substitute for 61 or 62. Prerequisite, chemistry 1.

Bailey.

51.—**QUANTITATIVE ANALYSIS I.** Two, three, or five hours credit. Both semesters, 10:30 to 12:30 or 1:30 to 3:30. A general course covering the fundamental principles of gravimetric and volumetric analyses. Prerequisite, course 3.

Allen and assistants.

52.—**QUANTITATIVE ANALYSIS II.** Two, three, or five hours credit. Both semesters, 1:30 to 3:30, or by appointment. In connection with this work some specialty, such as cement, glass, or packing-house industry, rock analysis, paint analysis, etc., may be pursued. Prerequisite, course 51.

Allen and assistants.

52A.—SANITARY WATER ANALYSIS. Three hours credit. Second semester, 10:30 to 12:30. Laboratory work in the sanitary analysis of water and sewage. Lectures and assigned readings on the interpretation of results and upon the methods used. Especially designed to fit students for commercial positions in this line of work. Prerequisite, course 51. Bruckmiller.

52C.—GAS ANALYSIS. Two hours credit. First semester, by appointment. A laboratory course of general gasometric methods, analysis of flue gases, artificial and natural gases. Prerequisite, course 51. Allen.

52D.—FOOD ANALYSIS. Three hours credit. Both semesters, by appointment. Lectures and laboratory. Prerequisites, courses 51 and 61 or 62. Long.

52E.—OIL ANALYSIS. Two hours credit. First semester, by appointment. The examination of petroleum and their products, lubricating oils, asphalts, and road materials. Prerequisite, course 51. Allen.

52F.—IRON AND STEEL ANALYSIS. Two hours credit. Second semester, by appointment. Analysis of special steels and alloys. Prerequisite, course 51. Allen.

52G.—THE CHEMISTRY OF MILLING AND BAKING. Two hours credit. Second semester, by appointment. Designed to meet the requirements of chemists desiring to carry on control work in the milling industry. Prerequisites, courses 51 and 61 or 62. Estes.

52H.—INDUSTRIAL ORGANIC ANALYSIS. Two hours credit. Second semester, by appointment. Including analyses of soap, paper, leather, starches, etc. Prerequisites, courses 51 and 61 or 62. Estes.

52I.—WET ASSAYING. Two hours credit. Second semester, by appointment. Volumetric methods for the estimation of copper, lead, zinc, manganese, iron, silver, gold, etc. Prerequisite, course 51. Allen.

53.—ASSAYING AND METALLURGICAL ANALYSIS. Three hours credit. Second semester, 3:30 to 5:30. The course will cover the fire assay of gold, silver, copper, and other metals. If a student has not taken course 52 he may profitably supplement the fire assaying with two hours' work on the volumetric assay of ore and furnace products.

Whitaker and Parkhurst.

60.—CHEMISTRY OF FOOD PRODUCTS. Five hours credit. Second semester, 3:30 to 5:30. This is intended as a general course for students who are interested in food supply, and includes a study of the source, composition, and use of foods. Attention is also given to the world's supply of foods and its manufacture and preparation for the market. Prerequisite, course 1. Bailey.

61.—ELEMENTARY ORGANIC CHEMISTRY. Five hours credit. Both semesters, 1:30 to 3:30. Designed to cover briefly the aliphatic and aromatic series, to discuss the more important derivatives, and to show their relationships and applications. Prerequisite, ten hours chemistry. Dains.

62.—ORGANIC CHEMISTRY I. Five hours credit. First semester, recitations, M. W. F., at 9:30. Laboratory, Tu. and Th. mornings or afternoons. For students who wish a more detailed knowledge of organic chemistry. In this course the aliphatic series only is discussed, the aromatic series being reserved for organic chemistry 63. Prerequisite, ten hours chemistry. Dains.

63.—ORGANIC CHEMISTRY II. Five hours credit. Second semester, recitations, M. W. F., at 9:30. Laboratory, Tu. and Th. mornings or afternoons. Aromatic series. Prerequisite, course 62. Dains.

NOTE.—Not more than five hours from courses 52 and its options and 53 may be taken.

70.—PHYSICAL CHEMISTRY I. Five hours credit. First semester, at 10:30. A course paying special attention to electrochemistry. Lectures, recitations, and laboratory work. Prerequisite, course 3 and satisfactory preparation in general physics and calculus. Cady.

71.—PHYSICAL CHEMISTRY II. Five hours credit. Second semester, at 10:30. A general course in theoretical and physical chemistry. Lectures, recitations, and laboratory work. Prerequisites, courses 1, 2, 3, 51, 61 or 62, and satisfactory preparation in general physics and calculus. Cady.

80.—INORGANIC INDUSTRIAL CHEMISTRY. Three hours credit. Second semester, at 11:30. A study of the inorganic industries, including such topics as the manufacture of acids, alkalies and other chemicals, fertilizers, paint and pigments, glass and cement, and the purification of water. Prerequisites, courses 1, 2, and 3. Whitaker.

81.—ORGANIC INDUSTRIAL CHEMISTRY. Three hours credit. First semester, at 9:30. A study of the organic industries, including such topics as the refining of petroleum, the distillation of wood and coal, packing houses, fermentation, soaps, leather, paper, starches, sugars, dyestuffs, etc. Prerequisites, courses 1, 2, 3, and 61 or 62. Whitaker.

90.—METALLURGY I. Three hours credit. First semester, at 11:30. General metallurgy, the metallurgy of iron and steel. Prerequisite, course 3. Whitaker.

91.—METALLURGY II. Three hours credit. Second semester, at 9:30. The metallurgy of lead, zinc, and copper, followed by that of silver, gold, mercury, and tin. Prerequisite, course 3. Whitaker.

92.—METALLURGICAL LABORATORY. Two hours credit. First semester by appointment. This course includes high-temperature measurements, calorimetry, preparation of silicate and alloys, study of roasting, reduction, oxidation, amalgamation, chlorination, cyaniding, and leaching. Prerequisite, course 90 or 91. Parkhurst.

93.—GENERAL METALLURGY. Two hours credit. First semester, at 11:30. Physical properties of metals and alloys, thermal analysis, pyrometry, refractories, slags, matte, bullion, typical metallurgical processes. Whitaker.

DESIGN.

Professors: GRIFFITH, HEKKING.

Instructor: BENSON.

EQUIPMENT. The department of design occupies six top-lighted studios on the third floor of the new Administration Building. They are well equipped with casts from the antique, books and plates upon the theory and history of ornamental design, printing presses, a potter's wheel, and easels. The classical museum and the museum of natural history offer an abundance of material for the use of students in design. Kilns are available for the firing of pottery, and the equipment of Fowler Shops for the work in wood and metal. A model poses for the life classes and the University campus offers an ideal sketching ground for the landscape painting classes.

ADVICE AS TO CHOICE OF COURSES. Technical students to whom some drawing is essential are advised to take course 1. Students wishing training in artistic perception and graphic expression for its general culture value should take course 1, followed by 2, or course 52.

1.—FREE-HAND DRAWING. Three hours credit. Both semesters, 1:30 to 3:30. Drawing with pencil and charcoal from the cast and objects of still life, including the principles of perspective and geometrical problems of mechanical drawing, which aims to teach the student to construct form in a simple and correct manner. Griffith.

2.—DESIGN I. Three hours credit. Both semesters, 8:30 to 10:30. The anatomy of pattern and the planning of ornament. Prerequisite, course 1. Benson.

51.—FREE-HAND DRAWING. Three hours credit. A continuation of course 1, for students doing more advanced work. Prerequisite, course 1. Both semesters, 2:30 to 4:30. Griffith.

52.—HISTORY OF PAINTING. Two hours credit. First semester, at 9:30. A lecture course presenting a survey of the whole field of painting, with the object of attaining the critical knowledge necessary to understand and enjoy a work of art. Griffith.

53.—HISTORY OF AMERICAN PAINTING. Two hours credit. Second semester, at 9:30. Griffith.

55.—DESIGN II. Three hours credit. Both semesters, at 10:30. The application of design. Prerequisite, course 2. Benson.

56.—APPLIED DESIGN I. One hour credit. One semester, five hours per week, by appointment. Must be preceded by courses 1 and 55.

57.—APPLIED DESIGN II. One hour credit. One semester, five hours per week, by appointment. A continuation of course 56.

58.—HISTORY OF DESIGN. Two hours credit. First semester, at 10:30. A lecture course upon the history of ornament. Griffith.

59.—ARTISTIC PHOTOGRAPHY. No credit. Second semester, at 10:30. A course upon the use of photography in artistic expression. Griffith.

ECONOMICS AND COMMERCE.

Professor: BOYNTON (Chairman of Department).

Associate Professor: PUTNAM.

Assistant Professors: DUFFUS, ISE, WOODBURY, HARPER.

EQUIPMENT. Instruction in this department is conducted chiefly by lectures, and reading and investigation in the library, aided in the elementary courses by textbooks. The University library contains about 3500 volumes relating to the courses of instruction, and a fair collection of special reports and documents for research work. All of the principal economic journals are on file in the reading rooms. In addition, there are charts, maps, and outlines. A limited amount of investigation of social and economic conditions is carried on.

ADVICE AS TO COURSES. Economics 1 is an essential foundation for and a prerequisite to all other courses in economics and commerce. Economics 2 and 3 lay a foundation for nearly all of the advanced courses and should be taken by all who expect to elect more than a few units in the department.

REQUIREMENTS FOR A MAJOR. The Elements of Economics (1 or 90), the Economic History of the United States (3), and, unless waived by the department in special cases, the Principles of Accounting I (64) *are prescribed for all major students*. The Principles of Accounting should be completed by the end of the Junior year. Major students wishing a general course, or planning to take a graduate course, are advised, in fulfilling the requirements for graduation, to elect from the following fundamental courses: Money and Credit (50), Banking (51), History and Organization of Transportation (55), Railway Rates and Regulation (56), Corporation Finance (57), Public Finance (61), Financial History of the United States (63), Statistics (68), Labor Problems (70), Economics of Agriculture (80), Value, Price and Distribution (91), and Economic Theory (93 and 94). Those who wish to make special preparation for some vocation should elect studies in addition to those required of all major students in accordance with the suggestions made below.

SUGGESTED SPECIAL GROUPS. By a judicious combination of courses in the department of economics and commerce, and other departments of

the College and the technical schools of the University, those wishing to make special preparation for some vocation can secure the more important courses given in the separate schools of commerce of other institutions. Such students should elect courses more liberally in the department than those who wish only a general major, or plan to take a graduate course. They should, also, early in their College course, consult with the faculty of the department with reference to the election of work in other departments. Upon graduation, those who complete not less than 35 hours, including all italicized subjects in one of the special groups numbered II, III, IV, V, and VI, provided they display good ability and in other respects merit high commendation, receive a special certificate from the department.

I. *Training for Commercial Teaching.* In completing their major requirements those wishing to prepare for teaching commercial subjects in high schools should take *Commercial Geography* (4), *Business Organization and Management* (54), *Business Law* (69), *Money and Credit* (50), *Banking* (51), and *Corporation Finance* (57). Teachers of commercial subjects are expected to know stenography and typewriting. These are not taught in the College, but a knowledge of them should be acquired.

II. *General Business Training.* Those who wish a general business course should take *Business Organization and Management* (54), *Money and Credit* (50), *Banking* (51), *Corporation Finance* (57), *Labor Problems* (70), *Insurance* (60), and *Business Law* (69). They should also elect advertising (journalism 55 and 56), and in meeting their group requirements, should elect psychology, logic, and more than one course in English composition.

III. *Training for Banking.* Those who plan to prepare for banking should take *Money and Credit* (50), *Banking* (51), *Practical Banking* (52), *Investments* (53), *Corporation Finance* (57), and *Business Law* (69).

IV. *Training for Railway Administration.* Those who expect to enter the field of railway transportation should take *Business Organization and Management* (54), *History of Transportation* (55), *Railway Rates* (56), *Corporation Finance* (57), *Statistics* (68), *Business Law* (69), and *Markets and Marketing* (81); they are advised to elect courses in civil or mechanical engineering also.

V. *Training for Commerce.* Those who expect to engage in mercantile pursuits should take *Commercial Geography* (4), *Markets and Marketing* (81), *Money and Credit* (50), *Railway Rates* (56), *Business Law* (69), *Business Organization and Management* (54), and *Corporation Finance* (57). They are advised to elect advertising (journalism 55 and 56) and psychology 1.

VI. *Training for Accounting.* Those who expect to enter the practice of accounting should take *Principles of Accounting II* (65), *Cost Accounting* (66), *Accounting Problems and Auditing* (67), *Statistics* (68), *Business Organization and Management* (54), *Corporation Finance* (57), *Industrial Combinations* (58), and *Business Law* (69). They should also elect probabilities and statistics (mathematics 10).

VII. *Training for the Public Service.* Those preparing for public service should take *Statistics* (68), *Public Finance* (61), *Labor Problems* (70), *Public Utilities* (59), and *Corporation Finance* (57). They should elect liberally in sociology and political science.

VIII. *Training for Social Service.* Those who plan to engage in some branch of social service should take *Statistics* (68), *Labor Problems* (70), *Labor Problems* (71), *Immigration* (72), and *Value, Price and Distribution* (91), and should elect several courses in sociology and political science.

IX. *Economics as preliminary to the Study of Law.* Many of the courses in economics and commerce will be found to be valuable in preparing for the study of law. Major students who expect to enter the legal profession should take Corporation Finance (57), Public Utilities (59), Public Finance (61), Money and Credit (50), Investments (53), and Labor Problems (70).

1.—ELEMENTS OF ECONOMICS. Five hours credit. Both semesters, at 8:30, 9:30, 10:30, 11:30, 1:30 and 2:30. This course is essentially a concrete analytical study of the laws governing man in his relation to wealth. It not only furnishes the basis for the scientific understanding of economic affairs, but serves as the foundation for all other courses in economics. Not open to Juniors and Seniors. (See 90.)

Putnam, Duffus, Ise, Woodbury, Harper.

2.—ECONOMIC HISTORY OF ENGLAND. Three hours credit. First semester, at 9:30. A study of the general development of agriculture, industry, and commerce in England from the tenth century to the present time. The course is designed to show the gradual evolution of an industrial society and to trace those changes by which modern England has attained her present economic position. Prerequisite, course 1.

Boynton.

3.—ECONOMIC HISTORY OF THE UNITED STATES. Three hours credit. Second semester, at 9:30. Attention is given to colonial agriculture, industry, and trade as an introduction to the course. After 1789, the main lines of study are the banking, transportation, and tariff history of the United States, with special attention to the development of the natural resources, the rise of manufactures, and the expansion of corporate methods in industry and trade. Prerequisite, course 1. Boynton.

4.—COMMERCIAL GEOGRAPHY. Three hours credit. Second semester, at 8:30. The localization of industry is the central problem of this course. The geographic division of labor is explained so far as possible in terms of nature, man, and accumulated goods. The chief products of the different countries and international trade in them are studied. Tariffs and commercial institutions are taken up. Prerequisite, course 1. (Not given in 1917-'18.)

Duffus.

5.—EUROPEAN INDUSTRY AND COMMERCE DURING THE NINETEENTH CENTURY I. Two hours credit. First semester, at 9:30. Agrarian, industrial, and commercial development of Europe in the nineteenth century. The agrarian movement and depression, the industrial revolution, the development of commerce and shipping, a brief consideration of shipping subsidies, industrial combinations and state policies regarding them, and tariff policies of the chief European countries. Not open to Freshmen. Prerequisite, course 1.

Ise.

6.—EUROPEAN INDUSTRY AND COMMERCE DURING THE NINETEENTH CENTURY II. Two hours credit. Second semester, at 9:30. A continuation of course 5, which must have been completed.

Ise.

50.—MONEY AND CREDIT. Three hours credit. First semester, at 10:30. The principal forms of money and of credit, as developed in the experience of the principal countries and at present in use in various parts of the world, are studied. Prerequisite, course 1.

Boynton.

51.—BANKING. Three hours credit. Second semester, at 11:30. The principles of banking are studied, and also the principal banking systems, both as to the historical steps in their development and as to their present forms and methods in different countries. Prerequisite, course 50.

Boynton.

52.—PRACTICAL BANKING. Two hours credit. First semester, at 10:30. A study of the organization and operation of commercial banks, savings banks, trust companies, and investment banking, including the

function of commercial paper houses and note brokers. The nature of banking and mercantile credit is analyzed as well as the broader relation of banking to the money market. Prerequisite, course 51.

Boynton.

53.—INVESTMENTS. Two hours credit. Second semester, at 9:30. A study of the various fields of investments, including railway, mining, and industrial securities, and the bonds of governments and municipalities, with special attention to the merits of particular stocks, bonds, mortgages, etc. The work of investment banking houses will likewise be considered. The aim of the course is to determine, so far as possible, the elements of a wise and conservative investment. Prerequisite, course 51.

Boynton.

54.—BUSINESS ORGANIZATION AND MANAGEMENT. Three hours credit. First semester, at 1:30. This course treats of general business organization and management, as well as the organization of the business of the bank, the factory, and the general office. The organization and working of the industrial and commercial corporation are given special consideration. Prerequisite, course 1. (Not given 1917-'18.)

55.—HISTORY AND ORGANIZATION OF TRANSPORTATION. Two hours credit. First semester, at 11:30. Canal construction and the development of the railway net of the United States; railroad finance and organization; problems of railway maintenance and methods of conducting transportation; accounts and reports illustrating railway operations; a comparative study of railway practices in other countries. Prerequisite course 1. Should be preceded by course 3.

Boynton.

56.—RAILWAY RATES AND REGULATION. Two hours credit. Second semester, at 11:30. A study of the theory of railway rates, and of rate-making in practice; problems of local and personal discrimination; adjustments due to geographical location and market competition; railway agreements; state railway commissions and the Interstate Commerce Commission; recent legislation, state and national, relating to railway transportation. Prerequisite, course 55.

Boynton.

57.—CORPORATION FINANCE. Two hours credit. First semester, at 1:30. A general course dealing with the financial side of large corporations, especially railways. The following are the leading topics studied: Internal organization; promotion and capitalization; the issue and sale of securities; disposition of corporate income; manipulation of finances; insolvency and receivership; principles of reorganization; overcapitalization and the regulation of security issues. Prerequisite, course 1.

Putnam.

58.—INDUSTRIAL COMBINATIONS. Two hours credit. Second semester, at 1:30. A continuation of course 57 dealing more specifically with the economic causes and consequences of the combination movement in industry. The origin of trusts; the trust movement in the United States—pools, trusts, and holding companies; analysis of the trust problem; recent trust decisions and anti-trust legislation. Must be preceded by course 57.

Putnam.

59.—PUBLIC UTILITIES. Two hours credit. Second semester, at 8:30. The topics studied are: problems of water, lighting, heating, and telephone service; street and interurban railway transportation; public ownership versus regulated private ownership; the determination of reasonable rates and adequate service; public utility reports and accounts. Prerequisite, course 1.

Duffus.

60.—INSURANCE. Three hours credit. Second semester, at 8:30. A study of (a) the general economic nature of risk and the theory of insurance; (b) the organized business of fire and life insurance, including details with respect to policy contracts, fire insurance rating, the

calculation of insurance premiums, reserves, investment of funds, etc.; and (c) the relation of the state to insurance. Prerequisite, course 1.

Duffus.

61.—PUBLIC FINANCE. Three hours credit. First semester, at 8:30. A general course dealing with public expenditures, budgets, revenues and debts, with special emphasis on the principles and practice of taxation. Prerequisite, course 1.

Woodbury.

62.—AMERICAN METHODS OF TAXATION. Three hours credit. Second semester, at 10:30. The course includes a study of federal, state, and local taxation in this country, with discussion of tariff reform, taxation of corporations, and income tax. Special attention is paid in the study of state and local taxation to the problems presented in Kansas. Prerequisite, course 61. (Not given in 1917-'18.)

Woodbury.

63.—FINANCIAL HISTORY OF THE UNITED STATES. Two hours credit. First semester, at 8:30. This course deals with the revenues, expenditures, and debt of the United States. Special attention is given to tariff history and to the growth of public expenditures since the Civil War. Prerequisite, course 1. (Not given in 1917-'18.)

Woodbury.

64.—PRINCIPLES OF ACCOUNTING I. Three hours credit. First semester, at 2:30. This course serves as an introduction to the field of accounting. No knowledge of bookkeeping is necessary. Single entry, double entry, trial balance, balance sheet, cost and income or profit and loss statement, closing the books, special books, special columns in books, subsidiary ledgers and controlling accounts. Laboratory fee charged for materials. Prerequisite, course 1.

Harper.

65.—PRINCIPLES OF ACCOUNTING II. Three hours credit. Second semester, at 2:30. A continuation of course 64. Adjustments and accruals, working sheet, manufacturing cost and income statements, comparative statements, goodwill, interest and depreciation, corporation and partnership accounting, dividends, surplus, sinking funds and reserves. Prerequisite, course 64.

Harper.

66.—COST ACCOUNTING. Two hours credit. First semester, at 2:30. The elements of cost and the relation of cost records to general books; recording of material, labor, and overhead costs; compiling and summarizing cost data; interpretation of cost data; examination of a plant and devising a cost system. Prerequisite, course 65.

Harper.

67.—ACCOUNTING PROBLEMS AND AUDITING. Two hours credit. Second semester, at 2:30. Exhaustive study of representative businesses; C. P. A. problems; the balance sheet audit, detailed audit, and local investigations of a practical nature. Prerequisite, course 65.

Harper.

68.—STATISTICS. Three hours credit. Second semester, at 10:30. A study of the statistical method applied to population, immigration, wages, prices, production and distribution. Special emphasis is laid on the margin of error and statistical fallacies. Prerequisite, course 1. (Not given in 1917-'18.)

Woodbury.

69.—BUSINESS LAW. Three hours credit. Second semester, at 9:30. A study is made of the principles of law with reference to their application to business. The essentials of contracts, agency, bailments, sales, negotiable instruments, real property, and other like topics are presented. The elements of partnership and corporation law are also studied. Prerequisite, course 1.

70.—LABOR PROBLEMS.—TRADE UNIONS. Two hours credit. First semester, at 8:30. After an introduction to labor problems, the history, growth, policies, and practices of trade unions are studied, with special reference to the United States. Prerequisite, course 1.

Woodbury.

71.—LABOR PROBLEMS.—THE STATE IN RELATION TO LABOR. Two hours credit. Second semester, at 10:30. A continuation of course 70. Topics studied are: compulsory arbitration, minimum wage, workmen's compen-

sation legislation, safety legislation, health insurance, old-age pensions, unemployment and its remedies, labor of women and children. These are studied with special reference to American conditions. Prerequisite, course 70 or its equivalent. Woodbury.

72.—IMMIGRATION PROBLEMS. Two hours credit. Second semester, at 10:30. The course is concerned with the history of immigration to the United States, its causes, character, geographical distribution, economic effects of immigration, pauperism, and the problem of assimilation. The special problems of oriental immigration and the question of immigration policy will also be studied. Prerequisite, course 1. (Not given in 1917-'18.) Woodbury.

73.—MODERN ECONOMIC REFORM. Three hours credit. Second semester, at 10:30. This course will treat of modern movements for economic reform, including the single tax, agrarian reform, coöperation, profit-sharing, syndicalism, socialism and communism, with a critical discussion of present and proposed methods of distribution and economic organization. Prerequisite, course 1. Woodbury.

80.—ECONOMICS OF AGRICULTURE. Three hours credit. Second semester, at 1:30. The principal topics studied are: private property in land; the public-land policy of the United States and its economic consequences; organization of the productive factors; size of farms, land values, and tenancy; rural credit; marketing; coöperative organization among farmers. Special attention is given to conditions in Kansas. Prerequisite, course 1. (Not given in 1917-'18.) Putnam.

81.—MARKETS AND MARKETING. Three hours credit. First semester, at 11:30. Summarized history of marketing organization; principal types of present-day markets and marketing agencies; the functions of the middleman in the distribution of the products of farm and factory; organized speculation in farm products; the organization of domestic and foreign trade; various proposals for improving marketing methods. Prerequisite, course 1. Duffus.

90.—ELEMENTS OF ECONOMICS. Three hours credit. First semester, at 1:30. The same as course 1, except that it is designed especially to meet the needs of Juniors and Seniors. Putnam.

91.—VALUE, PRICE, AND THE DISTRIBUTION OF WEALTH. Three hours credit. Second semester, at 1:30. This course is designed to give mature students of economics a firm grasp of the more important economic principles. The theories of value and prices and distribution are studied in the light of current schools of thought. Prerequisite, Course 1 or 90. Putnam.

93.—HISTORY OF ECONOMIC THEORY I. Two hours credit. First semester, at 9:30. The growth of thought about economic matters in ancient, mediæval, and modern times down to about the end of the eighteenth century, chiefly from the works of the original writers. This study furnishes many points for suggestive contrasts and comparisons between earlier and later theories, and explains many features of modern economic theories. Open to graduate students and Seniors with consent of the instructor. Prerequisite, course 1. Should be preceded by course 2 also. (Not given in 1917-'18.) Ise.

94.—HISTORY OF ECONOMIC THEORY II. Two hours credit. Second semester, at 9:30. The extensive economic literature of the nineteenth century is the subject matter of this course. The important economists are all studied at first hand, and occasional attention is given to the work of minor writers where their writings contain important germs of theories later developed by others of greater prominence. Prerequisite, course 93. (Not given in 1917-'18.) Ise.

EDUCATION.

The following courses in the School of Education are open to College students who do not elect courses from other professional schools, but not more than fifteen hours may be counted towards the degree of bachelor of arts. Students desiring admission to any of these courses must register in the School of Education as well as the College, and will be admitted to the classes as students of the School of Education.

Courses in education, of which detailed descriptions will be found in Section IX, are arranged in the following four groups. College students may not offer more than seven hours in any one group:

Historical group: numbers 50, 51, 59, 60, and 63.

Theoretical group: numbers 1, 54, 55, 64, 65, 67, 68, 69, 71, 75, 78, and 79.

Administrative group: numbers 2, 53, 56, 57, 58, 61, 66, 72, 73, 74, and 77.

Teachers' Courses: numbers 80, 81, 82, 83, 85, 86, 87, 88, 89, 90, 91, and 95.

No college credit is given for senior teaching.

ENGINEERING.

C. E. 1.—SURVEYING. Three hours credit. First semester, Tu. Th., at 10:30 and 11:30, with field work at 1:30 to 4:30. A course for College students. Prerequisite, plane trigonometry. McNown.

C. E. 2.—SURVEYING. Three hours credit. Second semester. A continuation of the preceding course. McNown.

The following courses in the School of Engineering are open to College students who do not elect courses from other professional schools, but not more than fifteen hours may be counted towards the degree of bachelor of arts. Students desiring admission to any of these courses must register in the School of Engineering as well as in the College, and will be admitted to the classes as engineering students:

ENG. DR. 3.—DESCRIPTIVE GEOMETRY. Three hours credit. Both semesters.

C. E. 52.—CITY PLANNING. Two hours credit. Second semester.

C. E. 70.—SANITARY ENGINEERING I. Three hours credit. First semester.

C. E. 71.—SANITARY ENGINEERING II. Four hours credit. Second semester.

C. E. 73.—SANITARY SCIENCE AND PUBLIC HEALTH. Two hours credit. First semester.

C. E. 75.—ROADS AND PAVEMENTS. Two hours credit. Second semester.

E. E. 50.—DYNAMO MACHINERY. Three hours credit. First semester.

E. E. 51.—THEORY OF ALTERNATING CURRENTS. Five hours credit. Second semester.

M. E. 51.—THERMODYNAMICS. Three hours credit. First semester.

M. E. 60.—SHOP METHODS. One and one-half hours credit. Second semester.

ENG. 51.—MANUFACTURING. Two hours credit. First semester.

ENG. 52.—INDUSTRIAL ADMINISTRATION. Three hours credit. Second semester.

MECH. 50.—MECHANICS. Five hours credit. Both semesters.

MECH. 51.—STRENGTH OF MATERIALS. Five hours credit. Both semesters.

MECH. 55.—HYDRAULICS. Three hours credit. Both semesters.

A. E. 5.—HISTORY OF ARCHITECTURE I. Three hours credit. First semester.

A. E. 6.—HISTORY OF ARCHITECTURE II. Three hours credit. Second semester.

MIN. E. 53.—ORE DRESSING. Three hours credit. Both semesters.

MIN. E. 68.—ELEMENTS OF MINING. Three hours credit. Both semesters.

ENGLISH LANGUAGE AND LITERATURE.

Professors: DUNLAP (Head of Department), HOPKINS,
O'LEARY.

Associate Professors: WHITCOMB, SISSON, JOHNSON,
LYNN.

Assistant Professors: GARDNER, BURNHAM, MORGAN.

Instructors: WINSTON, BROWN,* LAIRD, HOOPES,
WATTLES, SWENSON, FLINT, FORWARD, MCCAL-
LUM, SCHINDLER.

EQUIPMENT. Apart from a number of portraits and historical maps, the equipment for this department is the University Library, in which are collections of volumes and periodicals relating especially to rhetoric and composition, to English literature, and to the English language. There are complete sets of journals, such as *Anglia* and *Englische Studien*, and the publications of the Early English Text Society, the Chaucer Society, the English and American Dialect Societies, the Spenser Society, the Shakspeare Society, the New Shakspeare Society, the Shelley Society, the Browning Society, and others. The library also possesses the Shakspeare Jahrbuch, and facsimiles of the quartos and folios of Shakspeare. The total number of volumes pertaining to the subjects in this department is 12,506. Of these 1212 are devoted to Shakspeare, 7756 to other English literature, 740 to English philology, and 2798 to American literature.

Prerequisites: Courses 1, 2, 10, and 11, or their equivalents, must be completed before the student can be admitted to any other English courses whatever; and courses 12-14 or 13-15, scheduled for the Sophomore year, or their equivalent, are prerequisite to all succeeding courses in English literature. In special cases students may be allowed, with the consent of the department, to take courses 12-14 or 13-15 in connection with an advanced course.

RHETORIC AND COMPOSITION.

1.—RHETORIC I.** Three hours credit. First semester, at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30, 3:30. Written exercises, with study of language usage. Required of all Freshmen in the College not offering for entrance a fourth unit in English composition. Gardner and assistants.

2.—RHETORIC II.** Two hours credit. Second semester, at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30, 3:30. A continuation of course 1. Required of all Freshmen in the College not offering for entrance a fourth unit in English composition. Gardner and Assistants.

Credit for courses 1 and 2 is given provisionally and will be withdrawn for subsequent use of notably bad English.

3.—THE PRINCIPLES OF ARGUMENTATION.* Three hours credit. Second semester, at 10:30. The general principles of logic as applied in discourse, with briefs and exercises.
Hopkins.

* Absent on leave, 1916-'17.

50.—NARRATION AND DESCRIPTION. Three hours credit. First semester, at 8:30, 9:30, 10:30. A study of general principles, with exercises. A fundamental course, recommended as preparation for English 55 to 58, inclusive. O'Leary, Lynn, Morgan.

51.—NARRATION AND DESCRIPTION. Two hours credit. Second semester, at 8:30 and 9:30. Prerequisite course 50. O'Leary, Lynn, Gardner, Morgan.

52.—EXPOSITION. Two hours credit. First semester, at 9:30. A study of general principles, with outlines and exercises. A fundamental course recommended as preparation for English 55 to 58, inclusive. Gardner.

53.—ADVANCED ARGUMENT. Three hours credit. Second semester, at 2:30. Prerequisite, course 3. Hopkins.

55.—LITERARY CRITICISM. Two hours credit. First semester, at 1:30. A study of the principles and methods of criticism through its literature, with practice in book reviewing and in critical writing. Hopkins.

56.—VERSIFICATION. One hour credit. First semester, Monday, at 4:30. A study of the forms and principles of English verse, with exercises. Hopkins.

57.—ESSAY WRITING. Two hours credit. Second semester, at 10:30. A study of general principles, with exercises. O'Leary.

58.—PROSE INVENTION. Two hours credit. Second semester, at 1:30. A general survey of theories of literary art, with practice in original production. Library and conference course, with required thesis. Prerequisites, one or more advanced courses in English composition. Hopkins.

LANGUAGE.

60.—ELEMENTARY OLD ENGLISH. Three hours credit. Both semesters, at 3:30. Old English grammar, with reading of West Saxon prose texts. Burnham.

61.—BEOWULF. Two hours credit. Second semester, at 3:30. Prerequisite, course 60. Burnham.

62.—MIDDLE ENGLISH. Two hours credit. First semester, at 2:30. Language and literature of the fourteenth century, exclusive of Chaucer. Prerequisite, course 60. Burnham.

63.—MIDDLE ENGLISH. Three hours credit. Second semester, at 1:30. Reading of Middle English texts, with study of the development of the English language, its sounds, inflections, and syntax. Prerequisite, course 60. Burnham.

68.—MODERN ENGLISH GRAMMAR. Two hours credit. First semester, at 1:30. A course chiefly practical, for intending teachers. Open only to qualified applicants after consultation with the instructor. Burnham.

LITERATURE.

10.—ENGLISH LITERATURE. Two hours credit. First semester at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30. A study of representative authors. Open to all students of the College not offering English literature as a fourth unit of entrance English. Prerequisite for all other courses in English above 11, except in the case of students who offer for entrance a fourth unit in English literature. Johnson and assistants.

11.—ENGLISH LITERATURE. Three hours credit. Second semester, 8:30, 9:30, 10:30, 11:30, 1:30, 2:30. A study of representative authors. Prerequisite for all later courses in English, except in the case of students who offer for entrance a fourth unit in English literature. Johnson and assistants.

12 and 13.—HISTORY OF ENGLISH LITERATURE.* 12, three hours credit; 13, two hours credit. Both courses begin at the same point. First se-

mester, at 8:30, 9:30, 10:30, 11:30. Prerequisites, English 1, 2, 10, and 11. Lynn and assistants.

14 and 15.—HISTORY OF ENGLISH LITERATURE.* 14, two hours credit; 15, three hours credit. Second semester, at 8:30, 9:30, 10:30, 11:30. Prerequisites, English 1, 2, 10, and 11. Course 14 is a continuation of course 12, and course 15 of course 13. Lynn and assistants.

71.—AMERICAN LITERATURE I. Three hours credit. First semester, at 1:30. General history, with special reference to the work of the chief American poets. Hopkins.

72.—AMERICAN LITERATURE II. Three hours credit. Second semester, at 1:30. A study of later writers and of current literature, with special reference to fiction. Hopkins.

73.—ENGLISH LITERATURE OF THE EIGHTEENTH CENTURY. Two hours credit. First semester, at 9:30. The period covered is that from 1660 to approximately 1735. O'Leary.

74.—ENGLISH LITERATURE OF THE EIGHTEENTH CENTURY. Three hours credit. Second semester, at 9:30. Covers the period from approximately 1735 to 1798. O'Leary.

75.—VICTORIAN LITERATURE. Exclusive of the novel and Tennyson and Browning. Two hours credit. First semester, at 10:30. Dunlap.

76.—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Three hours credit. First semester, at 11:30. Prose, exclusive of the novel. The authors studied are Lamb, De Quincey, Hazlitt, Newman, Landor, Ruskin, and Stevenson. Dunlap.

77.—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Three hours credit. Second semester, at 9:30. Poetry. The authors studied are Wordsworth, Coleridge, Southey, Byron, Arnold, Tennyson, and Browning. Dunlap.

78.—SHAKSPEARE. Three hours credit. Both semesters, at 10:30. Interpretation of three plays. Dunlap.

79.—CHAUCER. Three hours credit. First semester, at 9:30. Neither Old nor Middle English required for entrance. Careful reading of the Prologue, Knightes Tale, and the Nonne Preestes Tale; rapid reading of a large part of the Canterbury Tales. Dunlap.

80.—SHELLEY AND KEATS. Two hours credit. Second semester, at 11:30. Lectures, and interpretation of selected poems. Dunlap.

81.—BROWNING AND TENNYSON. Two hours credit. Second semester, at 8:30. Interpretative study of selected poems, with general view of the works of both authors. Lynn.

82.—CARLYLE AND EMERSON. Two hours credit. Second semester, at 9:30. The characteristics of each man's work and its relation to nineteenth century thought. Lectures and class reports. (Given in 1918 and each alternate year following.) Johnson.

83.—MILTON AND HIS CONTEMPORARIES. Two hours credit. Second semester, at 9:30. The poetry and prose of Milton with supplementary study of representative contemporary authors. (Given in 1917 and each alternate year following.) Johnson.

84.—THE MODERN ENGLISH LYRIC. Two hours credit. First semester, at 3:30. A representative body of English lyrics will be studied in the class-room, with attention to the general criticism of lyric poetry. Whitcomb.

85.—TECHNIQUE AND THEORY OF THE DRAMA. Two hours credit. First semester, at 2:30. Study of dramatic dialogue, diction, characterization, and stage presentation. Lectures and weekly exercises in criticism or composition. Whitcomb.

86.—HISTORY OF THE ENGLISH DRAMA. Three hours credit. First semester, at 8:30. From the early liturgical plays of 1642. Study of origins and influences; the growth of types; stage history; and reading and criticism of about thirty plays. Lectures and written reports.

Johnson.

87.—HISTORY OF THE ENGLISH DRAMA. Three hours credit. Second semester, at 2:30. English dramatic history from 1642 to the present time, with special attention given to Victorian and post-Victorian drama.

Whitcomb.

88.—THE ENGLISH NOVEL. Three hours credit. Second semester, at 11:30. A historical and critical survey of the English novel, from Defoe to Meredith. Lectures on the growth and development of the novel. Study of selected typical novels, illustrative of important phases of fiction.

Dunlap.

89.—THE ENGLISH ESSAY. Two hours credit. Second semester, at 9:30. A study, historical and critical, of the essay as a literary form, from Bacon to the present time.

O'Leary.

91.—BIOGRAPHY AND AUTOBIOGRAPHY. Two hours credit. First semester, at 3:30. A study of the values and problems of the individual life, as suggested by the detailed records of significant lives.

Whitcomb.

ENTOMOLOGY.

Professor: HUNTER.

Assistant Professors: HUNGERFORD,* CLAASSEN.

Instructor: CLAASSEN.

Instructor: LAWSON.

Assistant Instructor: WELLHOUSE.

EQUIPMENT. The arrangement of the laboratories is such as to provide for (1) general instruction; (2) research work in serial-breeding experiments and conditions governing development. Special thermal regulators for determination of influence of temperature on development are used in these researches. A feature of great value is the recent completion of the cross-reference card index to the current entomological literature. A new insectary with greenhouse adjoining has just been completed. In addition to regular insectary equipment, special facilities for the study of aquatic life have been installed. The extensive collections, both biologic and systematic, offer exceptional facilities for comprehensive instruction in the various groups. A more extended notice of these collections will be found under the head of Museums. A large series of cabinets has been especially arranged to aid in teaching. These are supplemented by models illustrating developmental processes.

ADVICE AS TO CHOICE OF COURSES. The courses in entomology are designed to meet the needs of three classes of students: (1) The general student who desires a fuller knowledge and appreciation of the biological problems illustrated by insect life; (2) the student who is preparing to teach botany, zoölogy or general biology in the high school; (3) and the special student who is preparing to become a teacher or investigator. For the first class, courses 1, 2, 3, and 4 are recommended; for the second class, in addition to these, courses 51, 53, and 60. For the third class, after the completion of the four fundamental courses, the aims of each student will largely determine the selection of advanced courses. The advice of the department is that such selection shall be made only after consultation.

1.—INTRODUCTORY ENTOMOLOGY. Five hours credit. Both semesters, two sections, 9:30 and 10:30. A general course in life and be-

* Absent on leave.

havior of insects and other arthropods, and their relations to plants and other animals. A field, laboratory and lecture course with recitations designed for the general student. Fee, \$1. Hunter and assistants.

2.—MORPHOLOGY OF INSECTS I.* Three hours credit. Second semester, 10:30 to 12:30. A course presenting the more general features of the form and structure of a few representative insects. Laboratory study, lectures, and assigned readings. Prerequisite, course 1 or equivalent. Fee, \$1.50. Hunter.

50.—INTRODUCTORY ENTOMOLOGY. Five hours credit. Both semesters, at 1:30 to 2:30. A general course in life and behavior of insects and other arthropods, and their relations to plants and other animals. A field, laboratory, and lecture course with recitations. Not open to students who have had course 1. Fee, \$1.

51.—MORPHOLOGY OF INSECTS II. Three hours credit. First semester, 10:30 to 12:30. A study of the internal structure and development of a few representative types of insects, and their bearing upon physiological processes of life. Prerequisite, entomology 1 or equivalent. Fees, \$1.50.

52.—SYSTEMATIC ENTOMOLOGY. Two hours credit. Both semesters, 2:30 to 4:30. This course gives special prominence to the systematic position of the orders studied. The laboratory work consists of the classification of insects, and is accompanied by studies in the life history of the various forms identified. Prerequisite, entomology 1 or equivalent. Fee, \$1. Lawson.

53.—BIOLOGY OF THE ANTHROPODA. Two hours credit. First semester, 3:30. This course, conducted in field and laboratory, deals with ecology, adaptation to environment, mode of life, and such other general biological studies as illustrated in the lives of insects and other arthropods. Prerequisites, course 1 or equivalent. Fee, \$1. Hungerford.

54.—ADVANCED MORPHOLOGY AND HISTOLOGY OF INSECTS. Three hours credit. Both semesters, 1:30 to 3:30. Prerequisites, courses 4 and 51. Fee, \$1.50. Hunter.

55.—TAXONOMY OF INSECTS. Three hours credit. Both semesters, by appointment. A continuation of course 53, enabling the student to undertake the serious study of some one family. Students qualified to take this course are afforded an opportunity to work with the material secured on the biological survey trip of the previous summer. (Special study of the Coccidæ may be elected in this course.) Prerequisite, entomology 1 and 56. Fee, \$1. Hungerford.

56.—APPLIED ENTOMOLOGY I. Two hours credit. First semester, at 11:30. Lectures, recitations, and observations in the field on forms of economic value; life histories, habits, and methods of combating the injurious forms, and of utilizing the beneficial. Prerequisite, course 1 or equivalent. Fee, \$1. Hungerford.

57.—APPLIED ENTOMOLOGY II. Two hours credit. Second semester, at 11:30. A continuation of course 56. This course deals especially with those insects that are intimately associated with the household, the garden, and the farmyard. Course 56, which deals with the insects of farm and orchard crops, is not a prerequisite for this course, which is nontechnical, and is intended for the general student. Hungerford.

58.—MEDICAL ENTOMOLOGY. Two hours credit. First semester, at 10:30. A study of the relations of insects and other arthropods to public health. A lecture, recitation, and demonstration course for the purpose of acquainting the student with those forms which are liable to transmit human diseases. Hunter.

60.—AGRICULTURE. Two hours credit. First semester, at 8:30. This course deals with insects injurious to crops. This course should be taken in combination with botany 60. Hungerford.

61.—FIELD ENTOMOLOGY AND INSECTARY METHODS. Two hours credit, 3:30 to 5:30. First semester. This course is conducted in field and insectary, and involves a study of methods of collecting and of rearing insects. It is intended to serve two purposes; first, to give those intending to teach biology some knowledge of the handling of the material most available for their work; and second, to afford some training to those who purpose to carry on experiment-station work. Prerequisite, entomology I, and one course in applied entomology, or its equivalent. Fee, \$1. Hungerford.

GEOLOGY AND MINERALOGY.

Professor: HAWORTH (Head of Department.)

Assistant Professors: MOORE, TODD, HAYNES.

GENERAL STATEMENT. Under the general heading of geology are included structural, dynamic, stratigraphic, physiographic, economic, and historical geology, and invertebrate paleontology; also mineralogy, crystallography and petrology.

Students may begin work in geology 1 the first semester of the Sophomore year, and follow this by mineralogy 10 during the second semester. Throughout the Junior and Senior years subjects may be chosen in accordance with the general rules governing majors and minors.

Courses in the department are arranged with reference to three main classes of students: (a) those expecting to specialize in some phase of geological science; (b) those wishing to acquire some knowledge of the structure, composition and history of the earth as a part of a liberal education; and (c) those who feel they need some knowledge of the earth's surface and structure as an aid to the interpretation of facts of other sciences or branches of learning.

EQUIPMENT. The library includes the principal standard works on geology, invertebrate paleontology, mineralogy, and petrography, in the English, German, and French languages; fairly complete sets of governmental, state, and foreign reports; numerous American and foreign periodicals and transactions of domestic and foreign learned societies; all of which are conveniently located in the reading room of Haworth Hall. The department has also numerous charts and maps; a modern reflectoscope with over 400 lantern slides; papier-mâché models of structural and topographic forms; extensive collections of crystalline rocks and thin sections for petrology, rocks, ores, minerals, and fossils; sets of wooden and glass models of crystallographic forms; petrographic and other microscopes, and numerous other instruments for geologic work.

ADVICE AS TO CHOICE OF COURSES. Students wishing to specialize in geology should take substantially all the courses in the order outlined; those of the second class, mentioned above, should begin with course 1 and follow with courses 10 and 50, while those of the third class should select courses closely related to their major subjects in other departments.

1.—ELEMENTARY GEOLOGY. Five hours credit. Each semester, daily, 8:30, 9:30, 10:30, 2:30. A study of the elements of geology, including a general outline of geologic principles, geologic agencies, and a brief survey of geologic history. An acquaintance with the elements of chemistry, zoölogy and botany will be of advantage in this course.

Todd, Moore, Haynes.

10.—ELEMENTARY MINERALOGY. Five hours credit. Second semester, daily, 3:30 to 5:30. A brief course in crystallography, blow-pipe analysis, and systematic mineralogy, consisting of lectures and laboratory work. Prerequisite, elementary chemistry.

Haynes.

50.—PHYSIOGRAPHIC GEOLOGY. Five hours credit. First semester, at 11:30. This is an advanced course in continuation of Geology 1, comprising a careful investigation of geologic agencies and the results of their work. The development of land forms and the principles of sedimenta-

tion will be studied and the physiographic history of specific areas considered. The work will include library and laboratory study with special opportunity for training in the methods of geologic work. Prerequisite, course 1. Elementary physics and chemistry very desirable.

51.—HISTORICAL GEOLOGY. Five hours credit. Second semester, at 9:30. A study of the geologic history of the earth, the evolution and development of continents, stratigraphy, and the history of plant and animal life from their earliest known beginnings to the present. The geologic significance and use of fossils in the identification and correlation of stratified rocks will be discussed. Prerequisite, course 1. Elementary botany and zoölogy very desirable. Moore.

52.—STRUCTURAL AND DYNAMIC GEOLOGY I. Five hours credit. First semester, at 10:30. This course covers an extended study of the geological structure of the world, and of dynamic principles determining the same; also, study and practice in making geological sections, geological maps, and geological reports of specific areas. In this work much use is made of the various national and state geological survey reports. Prerequisite, course 1. Haworth, Haynes.

53.—STRUCTURAL AND DYNAMIC GEOLOGY II. Five hours credit. Second semester, at 10:30. A continuation of course 52. During this semester much outdoor work is done. It is intended to make the student sufficiently familiar with the plane-table and methods of using the same, and with methods employed by best practice of field geologist to prepare him for conducting practical geological investigations. Prerequisite, course 53. Haworth, Hoynes.

54.—ECONOMIC GEOLOGY I. Five hours credit. First semester, at 9:30. A general study of the metallic products of mine and quarry, considered from a scientific and a practical standpoint, including the nature, origin, amount and geographic and geologic distribution of the same. Prerequisites, elementary chemistry, and geology 1 or 10. Lectures and library work. Haworth, Haynes.

55.—ECONOMIC GEOLOGY II. Five hours credit. Second semester, at 10:30. Nonmetallic products, principally oil, gas, and coal. A brief study of the chemistry of the hydrocarbon fuels, followed by an extended study of their geology, geography, and commerce. Haworth, Haynes.

57.—INVERTEBRATE PALEONTOLOGY I. Five hours credit. First semester, by appointment. A study of the principles of paleontology and the structure, classification, and evolution of invertebrates which occur as fossils. The work is largely laboratory in character, but lectures are given as need requires. Prerequisites, geology 1, 2 and 51. Zoölogy 2a and 2b are very desirable. Moore.

58.—INVERTEBRATE PALEONTOLOGY II. Five hours credit. Second semester, by appointment. A continuation of course 57, but stratigraphical in its character. Fossils are studied as indices of time and geography. Course 57 is prerequisite. Moore.

59.—SOILS. Three hours credit. Second semester, at 2:30. A short course on soils, including a study of origin, nature, fertility and maintenance of same in soils. Scientific and practical. Textbook, lectures, and readings. Prerequisites, chemistry 1, geology 1. Haworth.

60.—SYSTEMATIC MINERALOGY. Five hours credit. First semester, by appointment. This course includes the study of the characteristics and manner of occurrence of a large number of minerals, with special consideration of minerals of economic importance. Prerequisite, course 10. Haynes.

61.—PETROLOGY. Five hours credit. Each semester, by appointment. This course consists of training in the methods of petrographic study and includes the macroscopic and microscopic examination of the principal rock types and a consideration of the theories of modern petrology. Haynes.

GERMANIC LANGUAGES AND LITERATURES.

Professors: ENGEL (Chairman of Department).

THURNAU.

Associate Professors: CORBIN,* KRUSE.

Assistant Professors: BRIGGS,* STURTEVANT, PALMBLAD, JONES.

Instructors: WILSON, SPANGLER, HOCHDÖRFER, HAWKINS, APPELBOOM.

EQUIPMENT. The German department has an excellent stereopticon, a balopticon, and over 1000 stereopticon slides, illustrating scenery, costumes, and biography; an increasing number of excellent photographs and prints in frames; a complete set of German wall maps showing the various separate states, and a few busts. The department has a Columbia graphophone and is accumulating a series of speech records for illustration of differing German pronunciation. There are 4598 volumes in the library of the German department, and twenty-one philological and literary journals are received.

The department has also a valuable collection of 3000 unbound dissertations and school programs, covering all fields of Germanistic scholarship. With the present library and this acquisition of special studies the German department is prepared to encourage graduate study in Germanic languages at the University of Kansas.

ADVICE AS TO CHOICE OF COURSES. Students who plan to major in German should consult with the department before the close of the Sophomore year for special guidance in their subsequent work in German and for advice as to courses to be taken in other departments. Courses 1 to 13 are open to all students of the College. Courses 52 to 59 are open to both undergraduates in the College and to graduate students. Courses 1, 2, 3, 4 must be taken in order. Students majoring in German must elect composition, course 10, which should be taken along with course 5 as a preparation for subsequent courses 6 to 13. From these at least one more reading course must be taken in preparation for the major group, courses 50 to 57.

1.—**ELEMENTARY GERMAN.—ESSENTIALS OF GRAMMAR.** Five hours credit. First semester, 8:30, 9:30, 10:30, 11:30, 1:30; second semester, 10:30, 11:30, 1:30 to 3:30. Practice in speaking and writing German. With the afternoon division, from 1:30 to 3:30, the laboratory method is used, requiring two hours classroom work and one hour preparation outside.

Engel, Corbin,

Sturtevant, Palmblad, Wilson, Spangler, Hochdoerfer.

2.—**PROSE READINGS.** Five hours credit. First semester, 9:30, 10:30, 11:30, 2:30. Second semester, 8:30, 9:30, 10:30, 11:30, 1:30. Selected texts from modern writers of short stories, with composition and conversation based upon them. Review of grammar topics, with exercises.

Corbin, Kruse, Jones, Palmblad, Wilson, Hochdoerfer, Hawkins.

3A.—**INTERMEDIATE GERMAN.** Five hours credit. First semester, 8:30, 9:30, 10:30, 11:30, 3:30. Second semester, 9:30, 10:30, 11:30. Selected narrative prose texts with composition and conversation based upon them; introduction to classics.

Thurnau,

Corbin, Sturtevant, Palmblad, Wilson, Spangler, Hochdoerfer, Baerg.

3B.—**SCIENTIFIC GERMAN.** Five hours credit. First semester, 8:30. A thorough review of grammar; *Das Edle Blut* or equivalent text, 40 to 50 pages, as introductory reading matter followed by a scientific German reader. This course is intended for students majoring in Science, and may not be counted toward a major in German. The aim of the course is to introduce the student to the style and vocabulary of scientific German and develop the ability to read simple scientific writings. Prerequisite, ten hours of College German.

Hawkins.

* Absent on leave, 1916-'17.

4A.—GERMAN CLASSICS. Five hours credit. First semester, 8:30, 9:30. Second semester, 9:30, 10:30, 2:30. Selected works from Lessing, Schiller, Goethe. Composition: Pope's Writing and Speaking German, eighteen lessons.

Engel, Sturtevant, Jones, Spangler, Hochdoerfer, Hawkins.

4B.—SCIENTIFIC GERMAN. Five hours credit. Second semester, 8:30. Reading of scientific German texts in class and assigned readings on selected topics outside of class. This course is also intended for students in Engineering and Medicine and those majoring in Science, and may not be counted toward a major in German. Its aim is to develop the rapid reading of more advanced scientific German in special fields. It is planned as a continuation of course No. 3B, but is open to students who have had 3A.

Hawkins.

5.—WALLENSTEIN. Three hours credit. First semester, 8:30, 9:30; second semester, 9:30. Students majoring in German should elect German Composition, course 10, in connection with this course.

Thurnau, Kruse.

6.—IPHIGENIE AND NATHAN DER WEISE. Three hours credit. First semester, 11:30; second semester, 8:30.

Thurnau, Corbin.

7.—MODERN NARRATIVE PROSE. Two hours credit. First semester, at 10:30. Selections from the best-known writers of the nineteenth and twentieth centuries. Prerequisite, German 4.

Jones.

8.—MODERN DRAMATIC PROSE. Two hours credit. Second semester, at 10:30. Reading of representative plays of the best-known modern dramatists. Open to students who have had German 4.

Wilson.

9.—HISTORICAL PROSE. Three hours credit. Second semester, at 9:30. Introductory reading of Schönfeld's German Historical Prose, followed by more rapid and extensive reading in selected historical writings. The purpose of this course is to develop rapid and intelligent reading of German works and periodicals in history and sociology. Prerequisite, German 4.

Sturtevant, Baerg.

10.—GERMAN COMPOSITION. Two hours credit. First semester, 8:30, 9:30, 11:30; second semester, 8:30, 10:30, 3:30. Required of all students majoring in German.

Sturtevant, Palmblad, Jones, Baerg.

11.—ADVANCED GERMAN COMPOSITION. Two hours credit. Second semester, at 9:30. This course is planned especially for those students who expect to teach German, but is open to all who have had course 10. The course aims to develop the ability to write correct and idiomatic German in translation and original compositions, with the mastery of a definite vocabulary.

Engel.

12.—GERMAN ORAL COMPOSITION. Two hours credit. First semester, 8:30; second semester, 8:30. The aim of this course is to aid students in acquiring and using a practical conversational vocabulary based on materials dealing with German life and customs. Prerequisite, course 4.

Hochdörfer.

13.—LESSING'S LAOCOÖN AND DRAMATURGIE. Three hours credit. Second semester, 9:30. Selected portions of these works, with supplementary reading and discussion of the principles of art and the drama.

Corbin, Palmblad.

50.—GOETHE'S FAUST. (Parts I and II.) Three hours credit. Second semester, at 11:30.

Thurnau, Corbin.

51.—GERMAN LITERATURE. Three hours credit. First semester, at 10:30. A general survey of the history of German literature from the earliest times to the classical period. Lectures in connection with Thomas' History and Anthology.

Thurnau.

52.—HISTORY OF GERMAN PROSE FICTION. Three hours credit. Second semester, at 10:30. Lectures and selected readings. Special emphasis on the growth of realism in the nineteenth century.

Thurnau.

53.—THE LYRICS OF GOETHE. Two hours credit. First semester, at 8:30. Study of the lyrics in connection with the life and letters of the author. Corbin.

54.—THE REALISTIC DRAMA. Three hours credit. First semester, at 8:30. A brief consideration of the development of the German drama, followed by a more intensive study of the dramas of Hebbel, Ludwig, and Anzengruber. Lectures, readings, and reports. Kruse.

55.—THE NATURALISTIC DRAMA. Two hours credit. Second semester, at 8:30. Hauptmann, Sudermann, and Halbe. Lectures, readings, and reports. Should be preceded by course 54. Kruse.

56.—THE ROMANTIC DRAMA. Two hours credit. Second semester, at 8:30. Heinrich von Kleist, Grillparzer, and Wagner. Lectures, readings, and reports. This course alternates with course 55. Kruse.

57.—STORM AND STRESS. Three hours credit. First semester, at 9:30. Special study of the writings of Goethe and Schiller in this period, with lectures and library reading on the lesser writers and the literary movement as a whole. Engel.

58.—MODERN SWEDISH I. Three hours credit. First semester, by appointment. Fort's Elementary Swedish Grammar, Hildebrand's Läs-bok, Esaias Tegner's Fritiofssagn and Nattwardsbarnen. (Not given in given in 1917-'18.) Sturtevant.

59.—MODERN SWEDISH II. Three hours credit. Second semester. A continuation of course 58.

60.—MODERN NORWEGIAN I. Three hours credit. First semester, by appointment. Olsen's Grammar and Reader, and selected texts. (Not given in 1917-'18.) Sturtevant.

61.—MODERN NORWEGIAN II. Three hours credit. Second semester. A continuation of course 60.

62.—MODERN DUTCH I. Three hours credit. First semester, by appointment. An introductory course the aim of which is to give a speaking and reading knowledge of Dutch. Special attention will be given to the relation between English, Dutch, and German. Students taking the course should have credit for at least twenty hours of German. Appelboom.

63.—MODERN DUTCH II. Three hours credit. Second semester, by appointment. This is a continuation of course I and includes a general survey of Dutch literature from 1600 to the present time with lectures and selected readings. Appelboom.

GREEK.

Professor: WILCOX.

Associate Professors: STERLING (Chairman of Department), BRANDT.

EQUIPMENT. Twelve casts of Greek sculpture in the round, ten busts; the east frieze and twelve slabs of the north, and three metopes of the Parthenon, and four other reliefs; a model of the Acropolis of Athens, the east pediment of the temple of Zeus at Olympia, and the Victories of Paionios and Samothrace; a relief map of Athens, and numerous wall maps; a series of facsimile reproductions of Mycenæan works of art; a few original ancient coins; 800 photographs; 500 plates (many colored) of architecture and vases and paintings; 55 illustrated folios; 3000 volumes in the library; 15 current periodicals; and a stereopticon with 3000 slides.

FOR STUDENTS OF CLASSICAL GREEK.

1.—ELEMENTARY GREEK. Five hours credit. First semester, at 9:30. Introductory course, covering the forms, syntax, and vocabulary necessary as a foundation for reading the literature. Sterling.

2.—XENOPHON'S ANABASIS. Five hours credit. Second semester, at 9:30. Application of principles learned in the preceding course, with a study of Xenophon's life and works. Sterling.

3.—HOMER'S ILIAD. Three hours credit. First semester, at 10:30. Reading of as much as possible in the original, and the rest in translation. Study of Homeric forms and versification. Brandt.

4.—PLATO'S APOLOGY, CRITO, and selections from the Phædo and Symposium. Three hours credit. Second semester, at 10:30. Study of the life and work of Socrates. Brandt.

5.—HERODOTUS. Two hours credit. Second semester, at 10:30. Reading of as much as possible in the original, and the rest in translation. Study of style and influence of Herodotus. Brandt.

6.—GREEK TRAGEDY. Three hours credit. First semester, at 9:30. The Antigone of Sophocles and Iphigenia in Tauris of Euripides. Study of the Greek theater and dramatic form. Brandt.

7.—DEMOSTHENES. Three hours credit. Second semester, at 3:30. The Philippics and Olynthiacs. Study of the life and times of Demosthenes. Brandt.

51.—ELEMENTARY GREEK. Five hours credit. First semester, at 1:30. The same as course 1, except that more work will be required. Sterling.

52.—XENOPHON'S ANABASIS. Five hours credit. Second semester, at 1:30. The same as course 2, except that more will be read. Sterling.

53.—HOMER'S ILIAD. Three hours credit. First semester, at 11:30, or by appointment. Reading of the whole book in the original, with critical study of select portions. Study of the Epic and Homeric life and times. Brandt.

54.—PLATO'S GORGIAS OR REPUBLIC. Three hours credit. Second semester, at 2:30, or by appointment. Outside reading of other dialogs of Plato. Study of the life and thought of his time. Brandt.

55.—LYRIC POETRY. Two hours credit. First semester, at 3:30, or by appointment. Selections from Elegiac, Iambic, and Melic poetry. Brandt.

56.—GREEK COMEDY. Two hours credit. Second semester, at 11:30, or by appointment. The Clouds and Frogs of Aristophanes. Study of the origin and development, form and content of Greek comedy. Brandt.

57.—HOMER'S ODYSSEY. Three hours credit. First semester, at 11:30, or by appointment. Reading of the whole book in the original, with critical studies of select portions. (Not given in 1917-'18.) Brandt.

58.—ALEXANDRIAN LITERATURE. Three hours credit. Second semester, at 2:30, or by appointment. Theocritus, Apollonius Rhodius, and the Anthology. Study of pastoral poetry and the late epic, and their influence on Latin and later poetry. (Not given in 1917-'18.) Brandt.

59.—THUCYDIDES. Two hours credit. First semester, at 3:30, or by appointment. Reading of as much as possible in the original, and the rest in translations. Studies in his style and historical method compared with Herodotus and later and modern historians. (Not given in 1917-'18.) Brandt.

60.—ARISTOTLE. Two hours credit. Second semester, at 11:30, or by appointment. The Poetics, and selections from the Politics and Ethics. Study of Aristotle's place in the history of thought. (Not given in 1917-'18.) Brandt.

FOR STUDENTS OF THE NEW TESTAMENT.

12.—ELEMENTARY NEW TESTAMENT GREEK. Five hours credit. Second semester, at 10:30. An introductory course for students who have no knowledge of Greek and wish to learn to read the New Testament in the original. Sterling.

13.—NEW TESTAMENT I. Two hours credit. First semester, at 10:30. Reading of as much of the New Testament in the original as possible. Prerequisite, course 12, or 1 and 2. Sterling.

63.—NEW TESTAMENT II. Two hours credit. First semester, at 8:30. The same as course 13, except that more work will be required. Sterling.

FOR STUDENTS OF ENGLISH AND NATURAL SCIENCES.

61.—THE GREEK IN ENGLISH. Three hours credit. First semester, at 8:30. A study of English etymology, with especial reference to Greek. Only so much Greek is studied as is necessary for the end in view. Sterling.

COURSES WHICH REQUIRE NO KNOWLEDGE OF THE GREEK LANGUAGE.

65.—GREEK POETRY IN TRANSLATIONS. Three hours credit. First semester, at 11:30. The epic and lyric poetry of the classic and Alexandrian ages. Study of form and content and influence on later poetry. Brandt.

66.—THE GREEK DRAMA IN TRANSLATIONS. Two hours credit. Second semester, at 11:30. Ten to twelve dramas of Æschylus, Sophocles, Euripides and Aristophanes are read and discussed from the points of view of form and content and influence on later and modern dramas. Brandt.

68.—GREEK PROSE MASTERPIECES IN TRANSLATIONS. Three hours credit. Second semester, at 2:30. Study of the form and content and influence of the principal works of the historians, orators, and philosophers; especially Herodotus, Thucydides, Demosthenes, and Plato. Sterling.

69.—GREEK ARCHITECTURE. Two hours credit. First semester, at 11:30. This course includes the fundamental principles of all styles, with special reference to the survivals and revivals of Greek elements. The result ought to be a knowledge of all historic styles, and not simply the Greek. Brandt.

70.—GREEK SCULPTURE AND PAINTING. Three hours credit. Second semester, at 11:30. This course includes, for purposes of comparison and appreciation, a summary view of the sculpture and painting of later and modern times. Brandt.

HISTORY AND POLITICAL SCIENCE.

Professors: HODDER (Head of Department), PATTERSON.

Associate Professors: DYKSTRA, CRAWFORD, DAVIS.

Assistant Professor: MOORE.

EQUIPMENT. The University library is supplied with all the important secondary authorities and with a considerable amount of source material. The latter includes the *Monumenta Germaniæ Historica*, the *Scriptores Rerum Italicarum*, the *Parliamentary History* and *Hansard's Debates*, the *Journals of the Lords and Commons*, the *British Statutes at Large*, the *Rolls Series*, the *Reports of the English Historical MSS. Commission*, and several series of the *Calendars of State Papers*. The library also contains such periodical publications as the *Annual Register*, *Gentleman's Magazine*, *Niles's Register* and *De Bow's Review*. The sets of congressional debates, American state papers and Kansas state documents are complete. The set of congressional documents begins with the second session of the twenty-eighth Congress. The supply of wall maps for classroom use is exceptionally large.

ADVICE AS TO CHOICE OF COURSES. The plan of the department is to furnish general courses for long historical periods, a series of intensive courses for shorter periods, and a limited number of courses in special fields. The courses in mediæval and English history serve as an introduction to all the work of the department. The general courses in modern European and American history are suited to the needs of students who do not intend to specialize in history, and the general course in one of the two fields may be taken to advantage by those intending to specialize in the other. A reading knowledge of French and German is advantageous to upper-class students of history and political science and indispensable to graduates. Students intending to take a major part in this field should, early in their course, consult the instructors in the department in regard to the best arrangement of their work.

HISTORY.

1.—**MEDLÆVAL HISTORY I.** Three hours credit. First semester, M. W., at 8:30, and third hour by appointment. A history of Europe from the barbarian invasions to the crusades. A fundamental course introductory to all the work in European history. Lectures, quizzes, collateral reading, and reports. Patterson.

2.—**MEDLÆVAL HISTORY II.** Three hours credit. Second semester, M. W., at 8:30, and a third hour by appointment. Covers the history of Europe from the crusades to the beginning of the sixteenth century. Lectures, quizzes, collateral reading, and reports. Continues and should be preceded by mediæval history I. Patterson.

3.—**ENGLISH HISTORY.** Five hours credit. First semester, at 9:30 and 10:30; second semester, at 9:30 and 10:30. Traces the development of England, Scotland, and Ireland with emphasis upon the growth of economic, social, and political institutions. Recitations and occasional lectures. Not open to students who have entrance credit for English history. Crawford.

4*.—**FOUNDATIONS OF MODERN EUROPE.** Three hours credit. First semester, at 1:30. A general survey of European development from 1500 to 1815. Continues the course in mediæval history and should precede the other courses in modern European history. Largely a textbook course. Melvin.

5*.—**EUROPE IN THE NINETEENTH CENTURY.** Three hours credit. Second semester, at 1:30. Continues the preceding course from 1815 to 1914 and should be preceded by it. Consists mainly of recitations. Melvin.

6.—**AMERICAN HISTORY.** Five hours credit. Both semesters, at 8:30. A general survey of American history from the discovery to the present time. Same as courses 7 and 8. Not open to students who have entrance credit in American history. Davis.

7 *a* and *b*.—**AMERICAN HISTORY I.** Three or two hours credit. First semester, *a*, three hours, at 9:30, and *b*, two hours at 9:30. Same as the first part of course 6, coming down to 1820 in the three-hour course and to 1789 in the two-hour course. Not open to students who have entrance credit for American history. Davis.

8 *a* and *b*.—**AMERICAN HISTORY II.** Three or two hours credit. Second semester, *a*, three hours, at 9:30, and *b*, two hours, at 9:30. Same as the last part of course 6. Preferably preceded by courses 7 *a* or *b*. 8 *a* continues 7 *b* from 1789 and 8 *b* continues 7 *a* from 1820. Not open to students who have entrance credit for American history. Davis.

50.—**GREEK HISTORY.** Two hours credit. First semester, at 10:30. The course will trace the political and intellectual development of the Greeks and emphasize social and economic changes. Lectures, quizzes, and collateral reading. Patterson.

51.—ROMAN HISTORY. Two hours credit. Second semester, at 10:30. A general survey, in which the period of the late republic and early empire receives special attention. Continues but is not necessarily preceded by Greek history. Patterson.

52.—MEDIÆVAL CULTURE. Two hours credit. First semester, at 9:30. A survey of the intellectual development of Europe from Augustine to Dante, including such subjects as mediæval literature, scholasticism, the universities, architecture, and the rise of the vernacular languages. Must be preceded by courses 1 and 2. (Not given in 1918-'19.) Patterson.

53.—MEDIÆVAL INSTITUTIONS. Two hours credit. First semester at 9:30. Growth of political and ecclesiastical institutions during the feudal period, and a detailed analysis of the organization of society in the twelfth and thirteenth centuries. Must be preceded by courses 1 and 2. (Not given in 1917-'18.) Patterson.

54.—ITALIAN RENAISSANCE. Two hours credit. Second semester, at 9:30. A survey of the political, social, economic, intellectual, and artistic development of the Italian people from the fourteenth to the sixteenth centuries. Must be preceded by courses 1 and 2. (Not given in 1918-'19.) Patterson.

55.—THE PROTESTANT REVOLT. Two hours credit. Second semester, at 9:30. After a review of the social, economic, and intellectual antecedents of the movement in Germany, the career of Luther and the progress of the revolt to the Peace of Augsburg will be traced. Must be preceded by courses 1 and 2. (Not given in 1917-'18.) Patterson.

56.—ENGLISH INSTITUTIONS I. Two hours credit. First semester, at 8:30. Treats of the Anglo-Saxon government, the foundations of parliament, the central and local government, the judiciary, feudalism, the manorial system, and gilds. Lectures, reports, and collateral reading. (Not given in 1918-'19.) Crawford.

57.—ENGLISH INSTITUTIONS II. Two hours credit. Second semester, at 8:30. Treats of the Tudor absolutism, the Reformation, the struggle between the crown and parliament, with special emphasis upon the nineteenth century. Continues and must be preceded by English Institutions I. (Not given in 1918-'19.) Crawford.

58.—HISTORY OF THE COMMON LAW I. Two hours credit. First semester, at 8:30. Treats of the fundamental principles of Anglo-Saxon law and procedure, the transition to common law, the growth of the judiciary, and the general principles of status and of real property. Primarily designed for students preparing for law, journalism, and business. (Not given in 1917-'18.) Crawford.

59.—HISTORY OF THE COMMON LAW II. Two hours credit. Second semester, at 8:30. Treats of the general principles of personal property, contracts, torts, crimes, and civil and criminal procedure. Continues and must be preceded by History of Common Law I. (Not given in 1917-'18.) Crawford.

60.—FRENCH REVOLUTION I. Two hours credit. First semester, at 1:30. Covers the revolutionary reconstruction of France and of Europe. Must be preceded by course 4 or its equivalent. A reading knowledge of French is desirable. Melvin.

61.—FRENCH REVOLUTION II. Two hours credit. Second semester at 1:30. Covers the revolutionary reconstruction of France and of Europe under Napoleon. Continues course 60. Must be preceded by course 4. A reading knowledge of French is desirable. Melvin.

62.—PROBLEMS OF MODERN EUROPEAN HISTORY I. Three hours credit. First semester, at 2:30. A series of studies of special fields in modern history to be given in successive years. The topic for 1917-'18 will be

European expansion. Open to students who have had courses 4 and 5 and an adequate language equipment. Melvin.

63.—PROBLEMS OF MODERN EUROPEAN HISTORY II. Three hours credit. Second semester at 2:30. Continues and must be preceded by course 62. The topic for 1917-'18 will be the Partition of the World. Melvin.

64.—AMERICAN COLONIAL HISTORY. Three hours credit. First semester, at 2:30. This course covers the discovery of America, the period of Spanish and French exploration, and the origin and development of the English colonies. Political Science 82 may be taken to advantage at the same time. Hodder.

65.—THE REVOLUTION AND THE CONSTITUTION. Three hours credit. Second semester, at 2:30. A study of the causes and results of the American Revolution and of the formation of the constitution. A continuation of course 58, but not necessarily preceded by it. Hodder.

66.—PRESIDENTIAL ADMINISTRATIONS I. Five hours credit. First semester, at 3:30. The political and constitutional history of the United States from 1789 to 1840. A topical treatment of the most important phases of American history. Should be preceded by Political Science 82. Hodder.

67.—PRESIDENTIAL ADMINISTRATIONS II. Five hours credit. Second semester, at 3:30. The political and constitutional history of the United States from 1840 to 1900. The causes and results of the Civil War. Continuation of course 60, but not necessarily preceded by it. Hodder.

68.—LATIN AMERICA. Three hours credit. First semester, at 11:30. The origin of the Spanish, Portuguese, and French colonies in America; the modification in Latin America of European institutions and culture; the struggle for independence and the succeeding national development and international relations of the Latin American states. Davis.

POLITICAL SCIENCE.

10.—AMERICAN GOVERNMENT.* Five hours credit. First semester, at 10:30, 11:30, and 1:30; second semester, at the same hours. A systematic study of the development and structure of American government, national, state, and local, with emphasis upon actual workings.

Dykstra and Moore.

80.—PRINCIPLES OF POLITICAL SCIENCE. Three hours credit. First semester, at 9:30. Deals with the fundamental principles of political science: the theory of the state, its origin, development, powers, and organization; the classification of states, and questions of law, rights, and citizenship. Dykstra.

81.—EUROPEAN GOVERNMENT. Three hours credit. First semester, at 11:30. An examination of the constitutions and political systems of the leading European states. (Not given 1917-'18.) Davis.

82.—AMERICAN CONSTITUTIONAL LAW. Two hours credit. Second semester, at 2:30. A study of the judicial construction of the constitution of the United States from the political rather than from the legal standpoint. Recitations. Hodder.

83.—INTERNATIONAL LAW. Three hours credit. First semester, at 10:30. A statement of the principles of public international law, including the Hague conventions, and supplemented with a study of cases and official documents. Moore.

84.—MUNICIPAL GOVERNMENT. Three hours credit. Second semester, at 9:30. A comparative study of the government of cities in Europe and America, their relation to the central government, their organization and administration. Dykstra.

85.—CONTEMPORARY DIPLOMACY. Three hours credit. Second semester, at 11:30. A systematic study of the controlling factors in international

relations, the methods of diplomatic procedure, the course of contemporary world politics and the diplomatic problems involved in the War of 1914. Davis.

86.—POLITICAL PARTIES. Two hours credit. First semester, at 11:30. The place of parties in democratic government; organization and development of party machinery; abuses of party organization, and the attempts to subject parties to popular control. Dykstra.

87.—AMERICAN STATE GOVERNMENT. Two hours credit. Second semester, at 11:30. The development of state constitutions in the United States, the problems of state government and an analysis of the various projects for reorganization and reform. Dykstra.

88.—ELEMENTARY LAW. Three hours credit. Second semester, at 10:30. A study of the fundamental principles of the common law, designed to give familiarity with common legal terms and court procedure and emphasizing particularly such subjects as torts, contracts, and real and personal property. Moore.

HOME ECONOMICS.

Professor: SPRAGUE (Head of Department).

Instructors: TEETOR, ALLEN, GWINN.

Assistant Instructors: DAUM, WOODRUFF.

EQUIPMENT. The department occupies nine rooms in Fraser Hall. These include two food laboratories, a chemical laboratory, a research laboratory, a textile and sewing room, and two lecture rooms with an experimental and demonstration kitchen in connection with one of them. These laboratories are equipped both for general class work and for research. The library contains the standard books on the subject.

ADVICE TO STUDENTS. The courses of instruction given in this department are planned to meet the needs of three classes of students: (a) those who desire a knowledge of the general principles and facts of home economics; (b) those who wish to major in home economics for the purpose of teaching the subject in secondary schools and colleges; (c) those who are interested in preparing to become dietitians, or to follow other professions.

Students who belong to groups (b) and (c) are advised to begin their work in the department as early as possible in order to secure a proper sequence of the elementary and advanced subjects; to have a desirable distribution of courses; to become thoroughly familiar with the subject matter before undertaking the course in the teaching of home economics and practice teaching; and, in the case of those who wish to do more advanced work, to provide for the necessary training in the fundamental sciences. Such students should consult the head of the department before arranging their courses.

ADVICE AS TO COURSES. Courses of a general nature which are suggested for students who are not majoring in the department, but who wish some training in the subjects pertaining to the home, are as follows: (1) Home Architecture, (2) Home Decoration, (60) Food and Nutrition, (65) Public Aspects of the Household, (71) Textiles, (72a) Clothing Design.

MAJOR REQUIREMENTS. Students may satisfy part of the requirement for the major in the department by the election of any of the following allied subjects in other departments: (53) Bacteriology of Foods, (60) Chemistry of Food Products, (52D) Food Analysis, (64) Heredity in Relation to Eugenics.

In general, the major in the department is as follows:

MAJOR IN HOME ECONOMICS.

(Freshman-Sophomore.)

PREREQUISITE.	PRESCRIBED.	Hrs.	SUGGESTED.	Hrs.
	1. Home architecture and sanitation	2	0. Sewing	0
Chemistry 1.....	3. Selection and preparation of food.....	5	2. Home decoration I.....	2
Selection and preparation of food	4. Economic uses of food* ..	5		

(Junior-Senior.)

Economic uses of food or. } Textiles Home architecture, etc... Economics I..... Sociology Economic uses of food.... } Organic chemistry..... Bacteriology, or..... Botany 4, or..... Dietetics	71. Textiles 3 80. Home administration. 3 52. Special problems in home economics...3-5	51. Dietetics 5 72. a Clothing (design)... 3 b Clothing (mfg.).... 2 65. Public aspects of the household 3 81. Home decoration II.. 3 53. Special problems in home economics...3-5
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0.—PLAIN SEWING AND GARMENT MAKING. No credit. First semester, Tu. Th., 1:30 to 4:30. Principles and practice in hand and machine sewing, drafting, and making of simple garments. This course is offered because the majority of students have not had the opportunity of taking it in the high school. It is prerequisite to course 72b. Fee, \$1. Allen.

1.—HOME ARCHITECTURE AND SANITATION. Two hours credit. Both semesters, 9:30 and 1:30. A study of the evolution of the house; the development of its functions as a place of shelter, defense, and the center of family life; types of domestic architecture; the planning and care of the house with regard to the comfort, convenience, and health of the family. Gwinn.

2.—HOME DECORATION. Two hours credit. Both semesters, 11:30 and 2:30. The theory of color and decoration and its application in home decoration; materials suitable for various purposes in the home; furnishings from an economic, sanitary, and artistic standpoint. Gwinn.

3.—SELECTION AND PREPARATION OF FOOD. Five hours credit. Both semesters, M. W. F., 8:30 to 10:30, and Tu. Th., 9:30; M. W. F., 10:30 to 12:30, and Tu. Th., 10:30. An experimental study of the different classes of nutrients, with the application of this knowledge in the selection and preparation of foods. Prerequisite, chemistry 1. Advised, physiology 1. Fee, \$5. Sprague, Allen, Gwinn, Woodruff.

4.—ECONOMIC USES OF FOOD.* Five hours credit. Both semesters, Tu. Th., 1:30 to 4:30; M. W., 1:30 to 2:30. The principles of food preservation, marketing and domestic storage; the planning of meals to prevent waste, give variety, and regulate cost according to food values. Prerequisite, course 3. Fee, \$4. Woodruff.

51.—DIETETICS. Five hours credit. Second semester, M. W. F., 10:30; and Tu. Th., 10:30 to 12:30. The principles of diet; the relation of food to health; food habits and dietary standards; the dietetic treatment of diseases; experimental study of special problems in nutrition. Prerequisites, economic uses of food, organic chemistry, physiology 1. Physiological chemistry advised. Fee, \$2.50. Daum.

52.—SPECIAL PROBLEMS IN HOME ECONOMICS I. Three or five hours credit. First semester. A critical study of common theories and practice

in food preparation and other home activities, with experimental investigation of special problems. Prerequisites, economic uses of food, elementary organic chemistry; bacteriology, or botany, or dietetics. Qualitative and quantitative chemistry advised. Fee, \$3 or \$5. Sprague.

53.—SPECIAL PROBLEMS IN HOME ECONOMICS II. Three or five hours credit. Second semester. Fee, \$3 or \$5. The work of each student will be under the direction of the member of the staff in charge of the subject chosen. A continuation of course 52.

60.—FOOD AND NUTRITION. Three hours credit. First semester, 11:30. The purpose of this course is to present in a nontechnical way the more elementary problems of food and nutrition with reference to the food requirements of man and the considerations which should underlie our judgment of the nutritive value of food. Designed for the general student. Woodruff.

65.—PUBLIC ASPECTS OF THE HOUSEHOLD. Three hours credit. Both semesters, 9:30. This course is designed to give the student a view of the broader aspects of home economics as it is related to the welfare of the community. Special emphasis will be laid upon the state and federal laws which are most directly connected with the home. Designed especially for the general student. Daum.

71.—TEXTILES. Three hours credit. Both semesters, M. W., 8:30 to 10:30; F. 8:30. A study of the production and manufacture of textiles from the standpoint of the consumer; the properties and uses of the different textile fibers and fabrics; tests for adulteration; principles of cleaning fabrics. Prerequisite, chemistry 1. Fee, \$2. Allen.

72a.—CLOTHING DESIGN. Three hours credit. Second semester, 2:30. A study of the history of costume with emphasis upon the factors influencing its design; the psychology of fashion; the hygiene of dress. Prerequisite, Design II. Gwinn.

72b.—CLOTHING MANUFACTURE. Two hours credit. Second semester, 2:30 to 5:30. Laboratory practice in carrying out designs; economic problems of the construction of clothing at home; economic and sociological phases of the clothing industry. Prerequisites, course 0 or equivalent, and 72a. (72a may accompany 72b.) Fee, \$2. Allen.

80.—HOME ADMINISTRATION. Three hours credit. Second semester, 10:30. A study of the home as a social unit and a classification of its problems; a brief history of the changes that have come in the work of women in the home; the economic and sociological value of home-making; the organization of the household, division of the income, general principles of buying. Prerequisites, economic uses of foods, or textiles; home architecture and sanitation; sociology 1, economics 1, or 90. Advised, zoölogy 60 and 64. Sprague.

81.—HOME DECORATION II. Three hours credit. Second semester, 8:30 to 10:30. A continuation of home decoration I, emphasizing the general principles of design in their application in the home. A study of selected problems in practical household designing. Prerequisite, design. Gwinn.

JOURNALISM.

Professors: THORPE,† FLINT (Chairman of Department.)

Assistant Professors: EVANS, RICE.

Instructor: THAYER.

Assistant Instructor: BROWN.

Men and women intending to enter newspaper work as a profession or as a stepping-stone to higher literary endeavor are here given the opportunity for specialized training accorded other professions. The department offers technical courses in the Sophomore, Junior, and Senior

† Absent on leave, 1916-'17.

years, makes suggestions as to preparatory courses in the Freshman year, and recommends supplementary courses to be pursued in the four years.

Students intending to do their major work in this field, and particularly those planning to do graduate work in journalism, should consult the faculty of the department as early as possible.

PRACTICAL WORK. The *University Daily Kansan*, published by students of the University, affords every opportunity for students to put the theory of the classroom into practice. From reporter to editor-in-chief, the student learns at first hand the organization of the newspaper office, becomes familiar with the mechanical, economic, and ethical problems, and acquires speed and accuracy in reportorial work and editorial supervision. Instruction in business management, particularly the science of cost finding, is emphasized.

EQUIPMENT. The laboratory of the department has all the facilities that go to make up a modern "back office." It is equipped with type-setting machines, linotypes and a monotype, a complete composing room, a book and newspaper press, and a battery of jobbers.

Reporters' desks in the "front office" are equipped with typewriters. The library of the department, containing a wide assortment of books on all phases of journalism, is in a room convenient to the news rooms and offices.

Thirty-six metropolitan dailies, representing the great newspaper personalities of the world, are received, together with the leading national weeklies and magazines. Five hundred Kansas papers also reach the laboratory regularly.

FEES. Each student enrolled in the department pays a fee of fifty cents to cover, in part, the cost of newspapers and magazines used in the daily work.

DESCRIPTION OF COURSES.

1.—**THE NEWSPAPER.*** Three hours credit. Both semesters. First semester, at 10:30 and 11:30; second semester, at 1:30. Materials and methods. The news story. The human-interest story and its kinship to the short story. The feature. The editorial. Gathering and writing campus news. Prerequisites, rhetoric 1 and 2. Evans, Rice, Thayer.

2.—**THE NEWSPAPER.*** Three hours credit. First semester, at 1:30. Second semester, at 10:30 and 11:30. Organization of the office; function of departmental heads, editor-in-chief, managing, news, city, and telegraph editors; sub-editors, financial, sporting, society, etc.; copy-readers, reporters; press associations; women in newspaper work; law of libel and copyright. Practical work daily in reporting. A continuation of course 1. Evans, Rice, Thayer.

3.—**COMPARATIVE JOURNALISM.*** Two hours credit. First semester, at 1:30. Intensive study of great newspaper personalities, including newspapers representative of all types in American journalism, with auxiliary lectures on journalism in England, France, Germany, and the Orient. Evans.

4.—**HISTORY OF AMERICAN JOURNALISM.*** Two hours credit. Second semester, at 1:30. A comprehensive view from the early beginnings in Massachusetts, through succeeding periods, to the present. Special studies of the careers of great American editors. Evans.

51.—**MAGAZINE WRITING.** Three hours credit. First semester, at 2:30. A close study of the work of successful magazine writers, with practice in writing articles. These, whenever they have enough distinction to warrant it, will be submitted to magazines. Evans.

52.—**THE SHORT STORY.** Three hours credit. Second semester, at 2:30. This course calls for the reading of 200 approved short stories and the

intensive study of selected specimens. As in the course in magazine writing, the student will be expected to produce the form for himself, with a view to possible publication. In both courses the student is expected to develop sound critical judgment with regard both to the literary and the commercial merits of matter under consideration. Evans.

53.—INTERPRETATION OF THE NEWS. Two hours credit. First semester, at 2:30. Editorial writing; a study of current events. The object of the course is to train students to seize upon the essentials of daily events and comment on them intelligibly and intelligently. Evans.

54.—INTERPRETATION OF THE NEWS. Two hours credit. Second semester at 2:30. Continuation of course 53, with emphasis upon practical work of writing editorial matter for publication. Evans.

55.—ADVERTISING I. Three hours credit. First semester, at 8:30 and 11:30. A study of the fields for newspaper, magazine, bill-board, street-car, and novelty advertising. The organization of the advertising business. Good and bad advertising copy. The mathematics of returns. (With practice in advertising salesmanship for the members of the class who desire it.) Flint.

56.—ADVERTISING II. Three hours credit. Second semester, at 8:30 and 11:30. The psychology of advertising. Application of theory to practice by the preparation of advertising copy and the planning of advertising campaigns. (With practice in advertising salesmanship for the members of the class who desire it.) Flint.

57.—NEWSPAPER ADMINISTRATION I. Two hours credit. First semester, at 9:30. A study of the business side of newspaper publishing, designed to familiarize the student with the equipment of a newspaper plant, the expenses of publishing a paper, its sources of income, and the operation of a job-printing establishment. Flint.

58.—NEWSPAPER ADMINISTRATION II. Two hours credit. Second semester, at 9:30. A continuation of 57, with special emphasis on the science of cost finding and efficiency. Flint.

59.—EDITORIAL PROBLEMS AND POLICIES I. Three hours credit. First semester, at 9:30. Ethics of journalism, problems of the editor, his relation to the public. The managing editor, outlining news campaigns; the news editor, his editorial capacity in display, quantity and position of news; and kindred problems. Flint.

60.—EDITORIAL PROBLEMS AND POLICIES II. Three hours credit. Second semester, at 9:30. Continuation of 59. Flint.

61.—EDITORIAL PRACTICE I. Two hours credit. First semester, at 8:30. Practical work in collecting, preparing, and editing matter for dailies, weeklies, and class periodicals. Rice.

62.—EDITORIAL PRACTICE II. Two hours credit. Second semester, at 8:30. Continuation of 61.

65.—THE MECHANICS OF PRINTING. No credit. Both semesters. Two lectures and eight hours laboratory weekly. Students are taught to set type, make up and lock up forms, etc. This class will work on the mechanical end of the University publications. Brown.

66.—THE ART OF PRINTING. No credit. Both semesters. Two lectures and five hours laboratory. Lectures on history and development of printing, with practical work in designing advertisements, title pages, etc., and study of color schemes. Brown.

NOTE.—Courses 65 and 66 are designed, first, to give the student a working knowledge of the mechanical department of a newspaper, that he may be better fitted for editorial supervision; second, to equip better those students who plan to own country papers; third, to reinforce rhetorical principles of mass, proportion, accuracy, emphasis, contrast, harmony, unity, and variety, by practical work with type faces.

LATIN LANGUAGE AND LITERATURE.

Professor: WALKER (Head of Department).

Associate Professors: OLIVER, MURRAY.

Assistant Professor: CRESSMAN.

EQUIPMENT. The department is well supplied with wall maps, books of reference and supplementary reading for all courses, photographs, and a large collection of antiquities illustrating many phases of Roman life. Its library equipment includes the Corpus of Latin Inscriptions and complete sets of all important classical journals. In addition to the general illustrative material of the classical museum, the department has about 750 large mounted photographs and many smaller unmounted ones. These are supplemented by a considerable collection of bronze, marble, and terra cotta antiquities.

ADVICE AS TO CHOICE OF COURSES. Those who intend to take only five hours of Latin to satisfy a group requirement must take course 1 if they have entered with no Latin, course 2 if with one unit, course 3 if with two units, course 4 if with three units. If they have entered with four units, they may select any five hours out of courses 5, 6, and 7.

Except by special arrangement, those who intend to major in Latin must complete courses 5, 7, 9, and 13 before electing Junior and Senior courses. Course 10 is also required, and should be taken early. Course 50 should be a part of the Junior work.

Those who expect recommendation as teachers of Latin without majoring in the department must, in general, have taken at least twenty-five hours of Latin beyond course 4, including courses 5, 7, 9, 10, and 13. Education 87 and 87a may be included in this amount. The exact requirement depends somewhat on the character of the work.

Those who wish to do the best work in Latin, especially those who look forward to graduate study in the subject, will need Greek and a reading knowledge of French and German.

1.—**ELEMENTARY LATIN.** Five hours credit. First semester, at 10:30. Though intended as a preparation for the further study of Latin, this course is planned largely for those whose chief interest is in English or the modern languages; general principles of language structure and development and the influence of Latin on English are emphasized as much as possible. Open to all who have had no Latin in the high school.
Cressman.

2.—**CÆSAR** (four books). Five hours credit. Second semester, at 8:30. Weekly exercises in Latin composition. Open to those who have had course 1 or its equivalent and have not read Cæsar in the high school.
Cressman.

3.—**CICERO** (six orations). Five hours credit. First semester, at 9:30. Weekly exercises in Latin composition. Open to those who have had course 2 or its equivalent and have not read Cicero in the high school.
Cressman.

4.—**VERGIL'S ÆNEID** (six books). Five hours credit. First semester, at 8:30; and second semester, at 9:30. With the study of mythology and careful practice in metrical reading. The chief emphasis will be laid on the literary side of the work. Open only to those who have had three units of Latin, not including Vergil. First semester, Oliver; second semester, Murray.

5.—**CICERO** (De Senectute). Three hours credit. First semester, at 9:30 and 11:30; second semester, at 9:30. With prose composition and a thorough review of the grammar. Open to those who have had four units of Latin, recommended to all who expect to take further courses in Latin, and required of all who expect to prepare for teaching Latin. First semester, at 9:30, Murray; at 11:30, Oliver; second semester, Cressman.

6.—LIVY (one book). Two hours credit. Both semesters, at 9:30. This course is intended to accompany course 5, but may be omitted by well-prepared students. Oliver.

7.—HORACE (Odes). Three hours credit. Second semester, at 11:30. With careful practice in metrical reading. The chief emphasis is laid on the literary side of the work. Must be preceded by course 4; should be preceded by either 5 or 6. Oliver.

8.—TERENCE (two plays). Two hours credit. Second semester, at 11:30. Must be preceded by course 5. Intended to accompany course 7. Those who must choose between 7 and 8 are advised to take 7. Those who elect it when qualified to elect course 51 will be required to read an additional play. Cressman.

9.—CICERO'S LETTERS. Three hours credit. First semester, at 10:30. The chief emphasis is laid on the historical points involved, so that the student gets a good knowledge of the period in which Cæsar and Cicero lived. Must be preceded by five hours beyond course 4. Walker.

10.—HISTORY OF ROMAN LITERATURE.* Two hours credit. Second semester, at 8:30. Mackail's Latin Literature, supplemented by lectures and assigned readings in English translations of the more important authors. No Latin preparation required. Oliver.

11.—HORACE (Satires and Epistles). Two hours credit. Second semester, W. F., at 10:30. Courses 11 and 12 may well be taken together. Prerequisite, eight hours beyond course 4. Oliver.

12.—ROMAN PRIVATE LIFE. One hour credit. Second semester, M., at 10:30. Johnston's Private Life of the Romans, supplemented by occasional lectures and the use of illustrative material. Prerequisite, five hours beyond course 4. Oliver.

13.—LATIN COMPOSITION. Two hours credit. First semester, at 11:30; and second semester at 10:30. Part I or part II of Nutting's Advanced Latin Composition, or an equivalent. Intended to accompany courses 11 and 12, but may be taken earlier by well-prepared students, the only necessary preparation being given in course 5. Required of all who wish a recommendation from the department as teachers of Latin. First semester, Cressman; second semester, Walker.

50.—ADVANCED LATIN COMPOSITION. Two hours credit. First semester, at 1:30. Prerequisite, course 13. Required as part of major. Walker.

Each of the following reading courses, 51 to 58, inclusive, must be preceded by at least twelve hours from courses 5 to 13, inclusive.

51.—PLAUTUS. Two hours credit. (Not given in 1917-'18.)

52.—VERGIL'S ECLOGUES AND GEORGICS. Two hours credit. (Not given in 1917-'18.)

53.—CATULLUS, TIBULLUS, AND PROPERTIUS. Two hours credit. First semester, at 10:30. Murray.

54.—PLINY'S LETTERS. Two hours credit. Second semester, at 1:30. Walker.

55.—LUCRETIIUS. Three hours credit. First semester, at 10:30. Oliver.

56.—THE ANNALS OF TACITUS. Three hours credit. (Not given in 1917-'18.)

57.—JUVENAL. Three hours credit. Second semester, at 8:30. Murray.

58.—LITERATURE OF THE EMPIRE. Three hours credit. First semester, at 8:30. A study of the history of literature under the empire, supplemented by the reading of portions of the most important works. (Not given in 1917-'18.)

59.—ROMAN POLITICAL INSTITUTIONS. Three hours credit. First semester, at 1:30. A study of the development and form of the Roman governmental system through the republic and the early empire. The course will be conducted by lectures and assigned readings. Prerequisite, three years of high-school Latin or their equivalent. Murray.

60.—CÆSAR'S GALLIC CAMPAIGNS. Three hours credit. Second semester, at 1:30. A critical study of the Gallic War, with especial reference to military, historical, and geographical questions. The course is intended primarily as an introduction to the methods of the graduate seminar, and secondarily as a practical course for teachers. Open to Seniors. (Not given in 1917-'18.)

61.—VERGIL. Three hours credit. Second semester, at 1:30. A rapid survey of the contents of the *Æneid*, with a study of the motives of the poem and Vergil's method of handling his material. A critical study of a few passages which involve difficulties of interpretation or of textual criticism. It is recommended that this course be preceded or accompanied by course 52. Open to Seniors. (Not given in 1916-'17.)

HEBREW.

70.—HEBREW LANGUAGE I. Three hours credit. First semester. An elementary course, including the grammatical principles of the language, the acquisition of a vocabulary, exercises in the translation of English into Hebrew and the reading of a few chapters in Genesis. Cressman.

71.—HEBREW LANGUAGE II. Three hours credit. Second semester. A continuation of course I, with further reading in the Old Testament. Cressman.

LAW.

The following courses in the School of Law are open to College Seniors who do not elect courses from other professional schools, but not more than fifteen hours may be counted towards the degree of bachelor of arts. Students desiring admission to any of these courses must register in the School of Law as well as in the College, and will be admitted to the classes as first-year law students.

51.—ELEMENTARY LAW. Two and one-half hours credit. First half of first semester.

52.—CRIMINAL LAW. Two and one-half hours credit. First half of first semester.

53.—AGENCY. Two and one-half hours credit. Second half of first semester.

54.—CONTRACTS. Five hours credit. First semester.

55.—BAILMENTS. Two and one-half hours credit. First half of second semester.

56.—TORTS. One hour credit. Second half of first semester; also, one and one-half hours, first half of second semester.

57.—SALES. Two and one-half hours credit. First half of second semester.

58.—DAMAGES. Two and one-half hours credit. Second half of second semester.

59.—DOMESTIC RELATIONS. Two and one-half hours credit. Second half of second semester.

60.—BILLS AND NOTES. Five hours credit. Second semester.

61.—SURETYSHIP. Two and one-half hours credit. Second half of second semester.

MATHEMATICS.

Professors: VAN DER VRIES (Chairman of Department); ASHTON.

Associate Professor: MITCHELL.

Assistant Professors: STOUTER, JORDAN, WHEELER, LEFSCHETZ.

Instructors: LARSEN, STEIMLEY, MILLER.

EQUIPMENT. The department of mathematics has a good collection of models in wood, plaster of Paris, and strings illustrating various theorems of geometry and analysis. The library contains about 2000 volumes relating to mathematics. The department also has in its possession a large collection of elementary textbooks, which is of especial value to prospective teachers, affording an excellent opportunity for comparing various methods of presentation.

ADVICE AS TO CHOICE OF COURSES. The courses in the department are arranged to meet the needs of four classes of students, as follows: (1) those who wish to study mathematics for general culture; (2) those who wish to take mathematics in preparation for advanced work in other departments; (3) those who wish to become teachers of mathematics in secondary schools; (4) those who wish to specialize with a view to finding a career in teaching and research in mathematics. The courses are arranged in three groups: the elementary group, open to all undergraduates; a more advanced group, open to Juniors, Seniors, and graduate students; and the graduate courses, open only to graduate students. (For a list of the latter courses see the announcements of the Graduate School.)

(1) For general culture all or a part of courses 1 to 10 in proper sequence are recommended; they may be taken two at a time (*i. e.*, 2 and 3, 4 and 5, etc.

(2) Students whose major work is in another department where mathematics is needed should consult with the head of the department in question regarding the mathematical courses they should elect.

Students in groups (3) and (4) will naturally major in the department.

MAJOR WORK. Under the general laws of the College, students majoring in this department must complete at least 30 hours of mathematics, of which at least 12 hours must be chosen from courses numbered 50 and above. Courses 2 to 7, either 50, 51, or 52, 55, 59, and 62 are required of all students majoring in the department.

(3) Those wishing to qualify for teachers of mathematics in high schools are advised to complete their major by taking at least courses 9, 57, and 60. They are also advised to take some courses in physics and astronomy.

(4) Students desiring to specialize in mathematics should take as many of the remaining courses offered as possible. Such students are advised to gain a reading knowledge of French and German as early in their course as possible. Italian will also be a great help.

1.—SOLID GEOMETRY. Two hours credit. Second semester, at 1:30. The usual theorems and constructions of standard textbooks and applications to the mensuration of surfaces and solids. Open to all students who do not offer solid geometry for entrance. Miller.

2a.—COLLEGE ALGEBRA. Three hours credit. First semester, 8:30, 9:30, 10:30, 11:30, 1:30, 2:30, 3:30; second semester, 8:30, 9:30, 10:30, 11:30, 1:30. Rapid review of elementary algebra; graphic representation; logarithms; determinants; theory of equations; Horner's method of approximation. Van der Vries, Stoutter, Miller.

2b.—COLLEGE ALGEBRA. Two hours credit. First semester, 9:30, 10:30; second semester, 8:30, 1:30. This differs from 2a only in giving less time to the theory of logarithms and the theory of equations.

Mitchell, Steimley.

2c.—COLLEGE ALGEBRA. Five hours credit. Both semesters at 8:30. This section is intended for students who have entered with only one unit of algebra. It includes a thorough review of elementary algebra and as many of the subjects of 2a as possible. It may also be taken by students offering one and a half units of elementary algebra, but for such students it will give only three hours credit. Miller.

3a.—PLANE TRIGONOMETRY. Two hours credit. First semester, 8:30, 9:30, 10:30, 11:30, 1:30, 2:30, 3:30; second semester, 8:30, 9:30, 10:30, 11:30. The six trigonometric functions; principal formulas of plane trigonometry, trigonometric equation, solution of triangles, and practical problems. Must be preceded or accompanied by course 2a, 2b, or 2c.

Van der Vries, Stouffer, Miller.

3b.—PLANE TRIGONOMETRY. Three hours credit. First semester, 9:30, 10:30; second semester, 8:30, 1:30. The same subjects as in 3a with the theory of logarithms and a short treatment of spherical trigonometry. Must be preceded or accompanied by course 2a, 2b, or 2c.

Mitchell, Steimley.

4.—ANALYTICAL GEOMETRY I. Two hours credit. First semester, at 10:30 and 11:30; second semester, at 8:30 and 10:30. The straight line, circle, elements of parabola, ellipse and hyperbola. Prerequisites, courses 2 and 3.

Van der Vries, Steimley.

5.—CALCULUS I. Three hours credit. First semester, at 10:30; second semester, at 8:30 and 10:30. Differential calculus; fundamental principles; derivatives; applications to geometry and mechanics; maxima and minima; indeterminates. Open to students who have completed or are taking course 4.

Mitchell, Steimley.

6.—ANALYTICAL GEOMETRY II. Two hours credit. First semester, at 11:30; second semester, at 9:30 and 10:30. Conic sections; polar coördinates; loci problems; higher plane curves. Prerequisite, course 4.

Van der Vries, Ashton, Stouffer.

7.—CALCULUS II. Three hours credit. First semester, at 11:30; second semester, at 10:30. Integral calculus; integration; definite integrals; applications to lengths, areas, and volumes. Prerequisites, courses 5 and 6; may be taken at the same time with course 6.

Stouffer, Steimley.

9.—SOLID ANALYTICAL GEOMETRY.* Two hours credit. Second semester, at 9:30. Solid analytical geometry of the straight line, plane, and the conicoids. Prerequisite, course 7.

Stouffer.

10.—MATHEMATICAL THEORY OF INVESTMENT.* Three hours credit. Second semester, at 11:30. This course will cover, first, the principles of infinite series as applied to annuities, etc., and the development of facility in logarithmic computation; second, the fundamentals of the theory of probability, with applications. Prerequisite, course 2.

Van der Vries.

11.—THEORY OF EQUATIONS.* Three hours credit. Second semester at 9:30. Algebraic solution of cubic and quartic, symmetric functions, transformations of equations, solutions of numerical equations in one differential equations; applications to geometry and physics. Prerequisites, courses 2 to 7.

Lefschetz.

50.—ANALYTIC MECHANICS. Three hours credit. Second semester, at 11:30. This course is recommended to those who desire a more thorough knowledge of the integral calculus and its practical applications. It will include center of gravity, moments of inertia, and the general theory of rectilinear and curvilinear motion in space. A large number of practical problems will be solved. Prerequisites, courses 2 to 7. Students are also advised to precede this course by physics 50.

Stouffer.

51.—DIFFERENTIAL EQUATIONS. Three hours credit. First semester, at 10:30. Ordinary differential equations; integration in series; partial differential equations; applications to geometry and physics. Prerequisites, courses 2 to 7. Lefschetz.

52.—ADVANCED CALCULUS. Three hours credit. First semester, at 9:30. Critical review of the fundamental notions of calculus; expansion in series; definite integrals; multiple integrals; line integrals; applications to geometry and physics. Prerequisites, courses 2 to 7. Ashton.

53.—ELLIPTIC INTEGRALS. Two hours credit. Second semester, at 11:30. Elliptic integrals; Jacobian elliptic functions; applications to geometry and physics. Prerequisites, courses 2 to 7. Ashton.

54.—ELEMENTARY NUMBER THEORY. Two hours credit. Second semester, at 8:30. Theory of divisibility, prime numbers, congruences, elements of theory of residues and of representation of a number by the simplest quadratic forms. Lefschetz.

55.—SERIES. Two hours credit. First semester, at 9:30. A study of selected topics in Fine's College Algebra. The idea of a number field; the development of the number system of algebra; definition of irrational number; fundamental theorems on limits; convergence of infinite series; power series; operations with infinite series; binomial, exponential and logarithmic series; infinite products. Prerequisites, courses 2 to 7. Mitchell.

57.—COMPLEX NUMBERS. Two hours credit. Second semester, at 10:30. Analytic and geometric properties of complex numbers; conditions of functionality; integration; circular transformation; applications. Prerequisite, course 55. Ashton.

59.—MODERN GEOMETRY I. Three hours credit. First semester, at 8:30. Fundamental forms; the principle of duality; perspectivity and projectivity between one-dimensional forms; one-dimensional coordinate systems; double ratio; linear transformations; involution; the harmonic properties of the complete quadrangle and quadrilateral. Prerequisites, courses 2 to 7. Van der Vries.

60.—MODERN GEOMETRY II. Three hours credit. Second semester, at 8:30. Two-dimensional coordinates, projective and special, both point and line; pencils and ranges of conics; collineations and introduction to continuous groups of collineations in the plane. Prerequisite, course 59. Van der Vries.

62.—HISTORY OF MATHEMATICS. Two hours credit. First semester, at 11:30. The historical development of elementary mathematics, including trigonometry, analytical geometry, and the calculus. Outlines, assigned readings, and class discussions. Open to Seniors who have had course 7. Mitchell.

MEDICINE.

College students who have attained at least full Senior standing and who have credit for certain subjects named below may offer in satisfaction of all or part of the requirements of the Senior year the entire first year of the medical curriculum. To such students the College will grant the degree of bachelor of arts.

College students who have attained at least full Junior standing and who have credit for certain subjects named below may offer in satisfaction of all or part of the requirements of the Junior and Senior years the entire first and second years of the medical curriculum. To such students the College will grant the degree of bachelor of science in medicine.

The subjects, or equivalents, which must have been completed before admission to the Medical School are:

Modern language, 10 hours, preferably German 1 and 2.

Chemistry, 10 hours, including at least 1 and 2.

Physics, 1, 5a and 5b, or 6a and 6b.

Biology, which should include zoölogy 3, and at least one course from zoölogy 1, 2, or botany 3.

To secure this privilege of offering medical work towards the College degree, the student must have spent one full year in residence at the College previous to enrollment in medical courses and must be certified to the Medical School by the Dean of the College as having met all the requirements above named. He must also register in the College as well as the Medical School and be subject to such general regulations of the College Faculty as govern other Juniors and Seniors.

A student who does not fully meet the entrance requirements to the Medical School will enroll in College classes necessary to complete such requirements, after which he may be admitted to the Medical School and enrolled in medical courses, but the aggregate number of hours of such enrollment in the two schools may not exceed that allowed to College students.

Whenever a student has completed the medical work in accordance with the foregoing provisions, the Dean of the Medical School will submit to the Dean of the College a certified statement of that fact accompanied by the recommendation of the Faculty of the School of Medicine that such student be admitted to the appropriate College degree. The student will then be named to the College Faculty as a candidate for that degree.

It should be noted that several of the courses embraced in the first three semesters of the medical curriculum are offered to College students in the various departments concerned.

MUSIC.

Professor: SKILTON.

Courses 50 and 51 are College courses and are open to all Juniors and Seniors.

Courses 52 to 60 are courses in the School of Fine Arts and are open to College Juniors and Seniors who do not elect courses from other professional schools, but not more than fifteen hours may be counted towards the degree of bachelor of arts. Students desiring admission to these courses must register in the School of Fine Arts as well as in the College, and will be admitted to the classes as fine arts students.

50.—APPRECIATION OF MUSIC. Two hours credit. First semester, at 10:30. A course for those who wish to learn to understand music as listeners without necessarily being performers. The different styles of music are explained and illustrated, with special reference to the University concerts. Skilton.

51.—DEVELOPMENT OF MUSIC. Two hours credit. Second semester, at 10:30. Detailed examination of famous composers, with reference to the history of their time and country. Skilton.

52.—HARMONY. Two hours credit.

53.—HARMONY. Two hours credit.

54.—HARMONY. Two hours credit.

55.—HARMONY. Two hours credit.

56.—COUNTERPOINT. One hour credit.

57.—COUNTERPOINT. One hour credit.

58.—MUSICAL COMPOSITION. One hour credit.

59.—MUSICAL COMPOSITION. One hour credit.

60.—INSTRUMENTATION. One hour credit.

PHARMACY.

*Professor: SAYRE.**Associate Professor: NELSON.*

50—BIOLOGICAL CHEMISTRY. Four or six hours credit. Second semester. For description, see Pharmacy School.

51.—ADVANCED BIOLOGICAL CHEMISTRY. Two, three, or five hours credit. Both semesters. A continuation of course 50.

PHILOSOPHY AND PSYCHOLOGY.

*Professors: TEMPLIN, HOLLANDS (Chairman of Department); HUNTER.**Associate Professor: DOCKERAY.**Assistant Professor: MITCHELL.**Instructor: PATERSON.*

EQUIPMENT. This department occupies a suite in the east wing of the new Administration Building, including classrooms, a reading room held jointly with the mathematics department, and the psychological laboratory. The philosophical library includes some 3500 volumes, 3000 of which are on the shelves of the reading room for ready reference by students. The laboratory has twelve rooms equipped both for class work and research.

MAJOR REQUIREMENTS. All students majoring in the department will be required to take the following courses: 1a, 2a, 3, 50, 70, and 71. Other elections will be determined by the special interests and purposes of the student. When such an arrangement seems expedient, students may satisfy all or part of the requirements for the major in this group, so far as these exceed those for the department major, by the election of allied subjects in other departments. Such students must state, in entering upon their major, to which of the four topics following they wish to give especial attention: (1) General Philosophy; (2) Ethics; (3) Logic and Methodology; (4) Psychology. Their selection of allied subjects must be made from the corresponding group, as indicated below.

ALLIED SUBJECTS IN GROUPS.

General Philosophy. English 81, Browning and Tennyson; English 82, Carlyle and Emerson; English 83, Milton and His Contemporaries; Greek 4, Plato; Greek 54, The Gorgias or Republic of Plato; Latin, 55, Lucretius; Mathematics 5, 7, Calculus I and II; Physics 5a, 5b, 6a, 6b, General Physics; Physics 50, Mechanics and Heat; Physics 51, Light and Radiant Energy; Physiology 70; Romance 56, French Literature of the Eighteenth Century; Romance 90, Dante; Zoölogy 4, Development and Heredity.

Ethics. Economics 70, 71, Labor Problems I and II; Economics 91, 92, Value, Price, and Distribution of Wealth; Economics 93, 94, Economic Theory; History and Political Science 80, Principles of Political Science; History and Political Science 83, International Law; Sociology 54, Public Opinion; Sociology 55, Psychological Sociology; Sociology 57, Socialism; Sociology 58, Anthropology; Sociology 59, Ethnology; Sociology 62, Development of Social Theory; Zoölogy 4, Development and Heredity.

Logic and Methodology. Economics 68, Statistics; Mathematics 5, 7, Calculus I and II; Mathematics 10, Probability and Statistics; Physics 5a, 5b, 6a, 6b, General Physics; Physics 50, Mechanics and Heat; Physics 51, Light and Radiant Energy.

Psychology. Anatomy 1, Introductory Anatomy; Anatomy 5, Neurology; Physics 5a, 5b, 6a, 6b, General Physics; Physics 51, Light and Radiant Energy; Physiology 70; Sociology 54, Public Opinion; Sociology 55, Psychological Sociology; Sociology 58, Anthropology; Sociology 59, Ethnology; Zoölogy 3, Comparative Anatomy; Zoölogy 4, Development and Heredity; Zoölogy 55, Embryology.

PSYCHOLOGY.

1a.—GENERAL PSYCHOLOGY.* Three hours credit. Both semesters, M. W., at 10:30 and 3:30, and third hour by appointment. A general survey of the fields of psychology with a careful study of the field of normal human psychology. It is required for admission to other psychology courses and to the School of Education. Elementary courses in biological and physical sciences are valuable antecedents. It is recommended that 1b accompany this course. Hunter, Dockeray and Paterson.

1b.—GENERAL PSYCHOLOGY LABORATORY.* Two hours credit. Both semesters, M. W., 8:30-10:30 or 1:30-3:30, or at the same hours Tu. Th. Experiments supplementary to 1a, which must accompany or precede this course. Dockeray, Paterson.

2a.—SENSORY PROCESSES AND FEELING.* Three hours credit. Second semester, 11:30. This is a foundation course and should be taken immediately after 1a and 1b by those planning to major in psychology. Dockeray.

2b.—SENSORY PROCESSES AND FEELING LABORATORY.* Two hours credit. Second semester, Tu. Th., 10:30-12:30. Experiments supplementary to 2a, which must accompany or precede this course. Dockeray.

50.—ATTENTION, LEARNING, AND THOUGHT. Three hours credit. First semester, 11:30. Courses 1b and 2a are recommended as antecedents. Hunter.

51.—ANIMAL BEHAVIOR. Three hours credit. First semester, 9:30. Vertebrate behavior is emphasized. The topics discussed are: tropisms, instincts, sensory discrimination, and higher capacities. Hunter.

52.—ABNORMAL PSYCHOLOGY. Three hours credit. Second semester, 9:30. A study of the subconscious in both the normal and the abnormal. Particular attention will also be given to hysteria and disintegrated personality. Dockeray.

53.—CHILD PSYCHOLOGY. Two hours credit. First semester, 8:30. The mental development of the child in the preadolescent period. Dockeray.

54.—INDIVIDUAL PSYCHOLOGY. Three hours credit. First semester, 8:30. A consideration of specific capacities, "general intelligence," sex differences, special defects, and the relation between individual differences and social status. Paterson.

55.—SOCIAL PSYCHOLOGY. Three hours credit. Second semester, 9:30. Social instincts and emotions, the psychology of social influence, and the self. Given in alternate years with course 56. (Given in 1917-'18.) Hunter.

56.—INSTINCT AND EMOTION. Three hours credit. Second semester, 9:30. An examination of the fundamental modes of acting and feeling. Given in alternate years with course 55. (Not given in 1917-'18.) Hunter.

57.—PSYCHOLOGICAL ÆSTHETICS. Two hours credit. Second semester, 9:30. The analysis of the beautiful and the comic. Special consideration is given to rhythm, melody, and harmony. This course should be preceded by course 1a, but is open without prerequisites to students in the School of Fine Arts. Hunter.

67.—PRINCIPLES OF PSYCHOLOGY. Three hours credit. Second semester, at 11:30. A consideration of the history and problems of psychology. Prerequisites, courses 1a, 2a, and 50. Hunter.

68.—ADVANCED PSYCHOLOGY I. Two to five hours credit. First semester by appointment. This course provides for the individual study of special topics by advanced students. The subjects will be determined by the desires of the students. Hunter, Dockeray, Paterson.

69.—ADVANCED PSYCHOLOGY II. Two to five hours credit. Second semester by appointment. A continuation of course 68, but not necessarily preceded by it. Hunter, Dockeray, Paterson.

PHILOSOPHY.

10.—ELEMENTARY LOGIC.* Three hours credit. Both semesters, at 9:30 and 2:30. Textbook course for beginners, presenting the elementary principles of deduction, induction, and circumstantial evidence. (N. B.—This course is open to first-year students who are to begin work in law in their Sophomore year.) Mitchell.

11.—INTRODUCTION TO PHILOSOPHY* Two hours credit. Both semesters, 9:30, 11:30, 2:30. Textbook course for beginners, presenting the general nature of philosophical problems and of the relation of philosophy to science, religion and art. Should be preceded by elementary courses in the biological and physical sciences. Mitchell, Hollands.

70.—HISTORY OF PHILOSOPHY I. Three hours credit. First semester, at 10:30. The development of philosophy in its relations to general culture, scientific theory, education, politics, and religion, as well as in its more strictly metaphysical aspects. The work of the first term will ordinarily cover ancient philosophy from Thales to Plotinus, with special reference to Plato and Aristotle. This course has no prerequisites in the department, but is a natural sequel to the Sophomore courses. Hollands.

71.—HISTORY OF PHILOSOPHY II. Three hours credit. Second semester, at 10:30. A continuation of course 70, but not necessarily preceded by it; continuous election is advisable. Mediæval and modern philosophy, from St. Augustine to the present. Hollands.

72.—PHILOSOPHICAL CLASSICS I. Two hours credit. First semester, at 10:30. This course furnishes an opportunity for the study of some of the works important in the history of philosophy. The authors read vary with succeeding terms. Must be preceded or accompanied by course 70, which it is intended to supplement. Mitchell.

73.—PHILOSOPHICAL CLASSICS II. Two hours credit. Second semester, at 10:30. A continuation of course 72. Must be accompanied or preceded by course 71, which it supplements. Mitchell.

74.—THE THEORY OF KNOWLEDGE. Three hours credit. First semester, at 11:30. The subject of the course is the problem of truth, with special reference to contemporary idealism, pragmatism, and realism. Prerequisites, courses 1a, 3, and 70, 71. Hollands.

75.—METAPHYSICS. Three hours credit. Second semester, at 11:30. Some typical tendencies and problems of contemporary thought will be examined and discussed in connection with the positive development of the subject. Prerequisites, courses 70, 71. Hollands.

76.—THE PHILOSOPHY OF RELIGION. Two hours credit. Second semester, at 10:30. After a preliminary examination of some of the theories concerning the origin and development of religion, in connection with the anthropological and psychological data, this course will consider some of the problems common to religion and philosophy. Prerequisites, courses 1a, and either 4, 70 or 71. Hollands.

77.—ADVANCED LOGIC. Three hours credit. Second semester, at 1:30. A sequel to course 3, with attention to some of the philosophical aspects and problems of logic. Considerable outside reading is required. Prerequisite, course 3. Mitchell.

80.—SYSTEMATIC ETHICS. Three hours credit. First semester, at 11:30. This course undertakes a critical examination into the psychological sources of human conduct, a review of the historic ethical theories, and the development of a satisfactory ethical system. Prerequisites, Courses 1a, and either 4, 70, or 71. Templin.

81.—PRACTICAL ETHICS. Two hours credit. Second semester, at 9:30. The application of theoretical principles of conduct to practical problems of life. Prerequisite, course 80. Templin.

PHYSICAL EDUCATION.

Professor: NAISMITH (Head of Department).

Associate Professor: CHILD.

Assistant Professor: HARRISON.

Instructors: PRATT, MIX.

For equipment reference is made to Section XII of the Catalog.

ADVICE AS TO CHOICE OF COURSES. The courses listed as exercises are designed primarily to secure health, recreation, and physical skill.

Course 20 is intended to teach the best methods of keeping the body at its highest efficiency, and of caring for it in emergencies.

Courses 50-58 are designed for the training of those who wish to become physical directors, coaches, managers, or any combination of these. Those looking forward to this work should take, in their Freshman and Sophomore years, at least one course in each of the following: anatomy, physiology, physics, chemistry, and psychology.

All Freshmen are required to take some form of exercise at least three times, and Sophomores twice, per week. An election from the listed courses is permitted according to the needs and wishes of the student.

A physical and medical examination is given to every student on entrance, and is used to determine the kind and amount of exercise best adapted for the individual. Abnormalities and conditions which affect the efficiency of the student will be pointed out; and, in so far as possible, he will be assisted in removing them.

Communications from parents or family physicians regarding the health of the student will be welcomed and will be of material assistance in directing his activities.

COURSES OF EXERCISE FOR MEN.

Exercise 1 and 2 are required of all Freshmen. Exercise 3 and 4 are required of all Sophomores. Exercise 5 to 10 are open, without credit, to College students, or may, by the direction of the instructor, constitute parts of the preceding exercises.

EXERCISE 1.** First semester, M. W. F., at 10:30, 11:30, 2:30, 3:30, 4:30. First half: recreative games and sports. Second half calisthenics, apparatus, and swimming.

EXERCISE 2.** Second semester, M. W. F., at 10:30, 11:30, 2:30, 3:30, 4:30. First half; apparatus, swimming, and indoor games. Second half: outdoor games, track and field sports, and advanced swimming.

EXERCISE 3. First semester, Tu. Th., at 11:30, 2:30, 3:30. Advanced calisthenics and apparatus work, squad leading, exhibition gymnastics, and rescue swimming. Required of Sophomores.

EXERCISE 4. Second semester, Tu. Th., at 11:30, 2:30, 3:30. Defensive sports, aquatics, squad leading, and advanced gymnastics. Required of Sophomores.

EXERCISE 5. First half first semester, daily, at 3:30. Freshman football.

EXERCISE 6. First half of first semester, daily, at 3:30. Varsity and class football, to which Sophomores are eligible.

EXERCISE 7. Second half of first semester, daily, at 7 p. m. Basketball, Freshman and varsity, to which Sophomores are eligible.

EXERCISE 8. First semester, daily, at 3:30. Track, Freshman and varsity, to which Sophomores are eligible.

EXERCISE 9. Second semester, daily, at 3:30. Continuation of course 8.

EXERCISE 10. Second semester, daily, at 2:30. Baseball, Freshman and varsity, to which Sophomores are eligible.

COURSES OF EXERCISE FOR WOMEN.

Students will not be permitted to engage in strenuous exercises that are beyond their development or that are likely to injure them, but will be encouraged to take part in the games that are adapted to benefit them.

Students not strong enough to take the regular class work will be given work of such a nature as to meet their special needs.

A regulation gymnasium costume is required, which may be purchased after reaching the University. Gymnasium shoes with leather soles must be worn in the gymnasium, and may be purchased in Lawrence. The dressing rooms are provided with ventilated steel lockers, shower baths, and hair dryers. There is a woman attendant.

Advanced students may elect any of the forms of exercise in which they are particularly interested.

EXERCISE 1.** First semester, M. W. F., at 10:30, 11:30, 2:30, 3:30. Calisthenics, wands, dumb-bells, pulley weights, elastic exercises, folk dances and gymnastic games.

EXERCISE 2.** Second semester, M. W. F., at 10:30, 11:30, 2:30, 3:30. Continuation of course 1. Prerequisite, course 1, or its equivalent.

EXERCISE 3. First semester, Tu. Th., 11:30, 2:30, 3:30. Swedish gymnastics, folk dancing, esthetic and rhythmical exercises; Indian clubs. Prerequisite, course 2. Required of Sophomores.

EXERCISE 4. Second semester, Tu, Th., at 11:30, 2:30, 3:30. A continuation of course 3. Prerequisite, course 3. Required of Sophomores.

EXERCISE 5. First semester daily, at 11:30. Advanced gymnastics, esthetic dancing, Swedish work, and games. Prerequisites, courses 1 to 4, or their equivalents.

EXERCISE 6. Second semester, daily, at 11:30. A continuation of course 5.

EXERCISE 7. Both semesters, daily at 11:30 or 2:30. Corrective gymnastics, arranged for those students who need special forms of exercise for correction of bodily defects.

SWIMMING. The swimming pool is used by the women students on Monday and Thursday from 10:30 to 12:30, 2:30 to 5:30. All students are advised to learn to swim.

BASKETBALL. Regular practice is held Tu. Th., at 4:30, but organized teams may play at any time when the floor is unoccupied. Interclass games will be held at the regular hour.

TENNIS. There are five courts on South Field reserved for the women students.

FIELD HOCKEY. On Friday the classes in exercises 2 and 3 may substitute hockey for regular work. Class and other teams may be organized, and have regular hours for practice on South Field. Hockey sticks and balls are provided by the University.

Other games may be played whenever the field is unoccupied and when groups of students select a time.

ARCHERY. Bows and arrows are provided for beginners, and contests are held at the close of the season.

HYGIENE.

20.—**HYGIENE.**** Required of all Freshmen, men and women. Weekly lecture, first semester, at one of the following periods: Men: M., 4:30; Tu., 11:30; W., 1:30: Women: W., 10:30, 4:30; Th. 11:30, 4:30.

Naismith, Child.

CREDIT COURSES.

50.—**KINESIOLOGY.** Three hours credit. First semester, 8:30 to 10:30. A study of the human body as a mechanism; the muscles demanded and

developed by exercise; muscles required in different forms of athletics; corrective exercises; message. Prerequisite, elementary anatomy.

Naismith.

51.—PHYSIOLOGY OF EXERCISE. Two hours credit. Second semester, 1:30. A study of the effects of exercise on the various systems of the body; effect of strain; feats of endurance; hygienic and recreative exercises; methods of development. Prerequisite, physiology 1. Child.

52.—ANTHROPOMETRY. Two hours credit. Second semester, 8:30. Physical, functional, and medical examination; tabulation and the use of the data of examination; the making of charts and diagrams and their use. Should be preceded by anatomy I and physiology I.

Naismith, Child.

55.—PRINCIPLES OF GYMNASTICS I. Two hours credit. First semester, Tu. Th., 9:30. A study of the systems of physical education—German, Swedish, French, and English. The development of modern gymnastics and their application to school and colleges; analysis of exercises and drills. Prerequisite, Freshmen and Sophomore courses; should also be preceded by 50, 51, and 52.

Harrison.

56.—PRINCIPLES OF GYMNASTICS II. Two hours credit. Second semester, M. W. F., 9:30. A continuation of course 55, and must be preceded by it.

Harrison.

57.—PRINCIPLES OF RECREATIVE SPORTS I. Two hours credit. First semester, Tu. Th., 10:30. A study of festivals and games, ancient and modern; their place and value; their classification. Methods of conducting recreative games, sports, and play festivals; playground technic. Should be preceded by 50, 51, and 52.

Pratt.

58.—PRINCIPLES OF RECREATIVE SPORTS II. Two hours credit. Second semester, Tu. Th., 10:30. A continuation of course 57, and should be preceded by it.

Pratt.

59.—PHYSICAL DEVELOPMENT OF THE CHILD. Three hours credit. Second semester M. W. F., 8:30. A study of the influence of heredity, nutrition, rest, exercise, training, curve of growth, effects of development on habits and character.

Naismith.

PHYSICS AND ASTRONOMY.

Professor: KESTER (Head of Department).

Associate Professor: RICE.

Assistant Professors: STIMPSON, SMITH, STOFFER.

Instructor: WHITTEMORE.

EQUIPMENT. The department occupies Blake Hall. The lecture rooms, laboratory and research rooms of the building are well supplied with water and gas and with various electrical circuits; the laboratory and research rooms are provided with piers free from vibration. A well-equipped shop and the services of an instrument maker are available for the construction of apparatus needed for special work. The equipment of apparatus for demonstration and regular laboratory work and for special investigation is good and is being increased constantly by well-chosen additions.

The physics library contains a fine collection of standard treatises, both elementary and advanced. American, English, German, French, and Italian journals of the science are at hand, with bound volumes for from twenty-five to forty years; the files of the more important journals have been extended back from seventy to ninety years. The published transactions and proceedings of a large number of the important physical societies of the world add notably to the value of the library for use in special fields of investigation.

The material equipment in astronomy consists of a six-inch telescope, made by Alvin Clark & Sons, on a portable equatorial tripod mounting;

an equatorial clock-drive and a micrometer eye-piece have been purchased for this telescope; a two-inch terrestrial telescope on a portable altazimuth mounting; one two-inch and one three-inch transit instrument; a sextant; a spectroscope for attachment to the six-inch telescope; a fine comparator for photographic plate measurements; two chronometers, one a break-circuit instrument; a chronograph; a twenty-inch celestial globe; 600 astronomical slides; star charts, atlases, maps, drawings, etc. In addition, the equipment in physics is available for demonstration and for laboratory work.

The astronomical library contains about 600 volumes, including some of the more important journals of the science.

ADVICE AS TO CHOICE OF COURSE. *Physics.*—The courses in physics are arranged to give, first, a general survey of the whole subject in the elementary and general courses (1, and 5 and 6); second, a more intensive study of the well-defined fundamental parts of the science in the courses 50 to 53 (with appropriate laboratory courses 55 to 57); and third, an opportunity to enter the more special fields in the courses 58 to 61. Courses 1, 5 and 6. (General Physics), or their equivalents, are necessary for enrollment in any other course in physics. It is desirable that course 5 precede course 6. They are open to all students of the College. Courses 50 to 64 are open to Juniors and Seniors and to graduate students. Courses 50, 51, 52, and 53, with accompanying laboratory courses, should all be taken by students making physics their major, and courses 58, 60, and 61 may be added. Courses 53, 58 and 60 do not presuppose the calculus. Students expecting to do advanced work in physics should obtain as early as practicable a working knowledge of the calculus. A reading knowledge of German and French is desirable for those who elect the advanced courses and is essential for graduates. Members of the department are glad to confer with students who intend to major in physics, and with those who intend to teach this science in high schools, as to the choice of courses best adapted to their needs.

Astronomy.—Students wishing only a general knowledge of the subject are advised to begin with Astronomy 10 and 11, and to follow these, if possible, with courses 80 and 81. The courses 80 to 86 are designed for those who wish to make astronomy a major study. The courses following 81 should be preceded either by 80 and 81, or by 10, and should be taken in order, with the exception of 84, which may be taken at any time, subject to the necessary prerequisites.

PHYSICS.

1.—**ELEMENTARY PHYSICS.** Five hours credit. Second semester, M. W. F., at 9:30; Tu. Th., 8:30 to 10:30. A first course in physics, intended to give a brief survey of the subject. Attention will be given, as far as possible, to problems in the household and everyday life. Recitations and laboratory, with some lectures and problems. Prerequisites, algebra and plane geometry. Not open for credit to students having credit in entrance physics. Laboratory fee, 50 cents. Rice.

5a.—**GENERAL PHYSICS I.** Mechanics, sound and light. Three hours credit. First semester, at 2:30. Lectures, recitations, problems. Prerequisites, a first course in physics, or a first course in chemistry, and some knowledge of plane trigonometry. Course 5a should be accompanied by 5b. Smith.

5b.—**GENERAL PHYSICS LABORATORY I.** Mechanics, sound, and light. Two hours credit. First semester, F. or Th., 1:30 to 5:30, or S., 8 to 12. Accompanied by or preceded by 5a. Fee, 75 cents. Smith.

6a.—**GENERAL PHYSICS II.** Heat and electricity. Three hours credit. Second semester, at 2:30. A continuation of course 5, with the same prerequisites. It is desirable that physics 5 precede this course, though not necessary. Course 6a should be accompanied by 6b. Smith.

6b.—GENERAL PHYSICS LABORATORY II. Two hours credit. Second semester, T. or Th., 1:30 to 5:30, or S., 8 to 12. Coördinate with 6a, with the same prerequisites. Course 6b must be accompanied or preceded by 6a. Fee, 75 cents. Smith.

50.—MECHANICS AND HEAT. Three hours credit. First semester, at 9:30. Lectures and recitations. Prerequisites, courses 5 and 6, or 1E and 2E, and calculus. Kester.

It is recommended that this course be followed by Mathematics 50, Analytical Mechanics, three hours.

51.—LIGHT AND RADIANT ENERGY. Three hours credit. Second semester, at 8:30. Prerequisites, courses 5 and 6, or 1E and 2E, and calculus. Offered in alternate years. Smith.

52.—ELECTRICITY. Three hours credit. First semester, at 8:30. Lectures, recitations, and problems. Prerequisites, courses 5 and 6, or 1E and 2E, and calculus. Rice.

53.—CONDUCTION OF ELECTRICITY THROUGH GASES. Three hours credit. First semester, at 9:30. Prerequisites, courses 5 and 6, or 1E and 2E. Offered in alternate years. (Not offered in 1917-'18.) Kester.

Courses 50, 51, 52, and 53 are designed to form a two-year cycle for theoretical treatment of the essentials of the subject matter of physics. The cycle is offered especially for Juniors and Seniors who are taking their major in physics. Either year of it is acceptable as a minor for graduate students who are working for the master's degree with their major in another department. An opportunity is offered in the laboratory courses 55 to 57 for experimental work which shall supplement to any desired extent the theoretical development of a given branch of the subject.

54.—PRINCIPLES OF ELECTRIC WAVE TELEGRAPHY. Three hours credit. First semester, by appointment. A study of the fundamentals of wireless telegraphy. Prerequisite, a course in general physics. Some use is also made of calculus. (Not given in 1917-'18.) Whittemore.

55.—PHYSICAL LABORATORY. Light and radiant energy. Two to five hours credit. Second semester, by appointment. Prerequisites, physics 5 and 6, or 1E and 2E, or their equivalents. Fee, 75 cents to \$2. Smith.

56.—PHYSICS LABORATORY. Electricity. Two to five hours credit. Both semesters, by appointment. Prerequisites, physics 5 and 6, or 1E and 2E, or their equivalents. Fee, 75 cents to \$2. Rice.

57.—PHYSICS LABORATORY. Conduction of electricity through gases, and radioactivity. Two to five hours credit, second semester, by appointment. Prerequisites, physics 5 and 6, or 1E and 2E, or their equivalent. Fee, 75 cents to \$2. Kester.

Courses 54, 55, 56, 57 are coördinate with 50, 51, 52, 53, with the same prerequisites, and supplement them from an experimental point of view.

58.—TEMPERATURE CONTROL AND MEASUREMENT. Three hours credit. Second semester, Tu., at 8:30; Th., 8:30 to 10:30; S., 8:30 to 11:30. This course will treat the subjects of the maintenance of constant temperatures, high and low; the various methods of measuring temperatures and of standardizing instruments, such as the platinum resistance thermometer, the thermo-electric couple, the pyrometer. Offered in alternate years. Fee, \$1. Kester.

59.—ELECTRIC WAVE TELEGRAPHY LABORATORY. Two to four hours credit. First semester by appointment. Must be preceded by or accompany course 54. An experimental study of the production of oscillations, measurement of the quantities involved and methods of reception in wireless telegraphy. Whittemore.

60.—OPTICAL INSTRUMENTS. Three hours credit. Second semester, at 8:30. This course is coördinate with 51, treating the theory of light only in so far as it relates to applied optics. Offered in alternate years. (Not offered in 1917-'18.) Smith.

61.—ALTERNATING AND OSCILLATING CURRENTS. Three hours credit. Second semester, by appointment. Lectures, recitations, and problems.

A continuation of course 52, dealing with the mathematical theory of alternating and oscillating currents and the propagation of varying electric currents in wires. Prerequisites, course 52 and some work in course 56, or equivalent, and a good working knowledge of calculus. Offered in alternate years. Rice.

63.—PHYSICS COLLOQUIUM I. One hour credit. First semester, by appointment. The members and the advanced students of the department meet once a week to report on researches published in the journals of the science and on the progress of original investigations carried on by members of the colloquium.

64.—PHYSICS COLLOQUIUM II. One hour credit. Second semester, by appointment. A continuation of course 63.

ASTRONOMY.

10.—DESCRIPTIVE ASTRONOMY. Three hours credit. Both semesters, at 9:30. An elementary course serving as an introduction to the subject. Stouffer.

11.—OBSERVATIONAL ASTRONOMY.* Two hours credit. First semester. Stress is laid on methods which may be carried on without the aid of large instruments, and which can be continued by the student independently. Prerequisite, trigonometry and astronomy 10. One evening and one afternoon a week.

80.—GENERAL ASTRONOMY I. Three hours credit. First semester, at 10:30. A comprehensive treatment of the subject, based on Young's General Astronomy, supplemented by reference to current astronomical literature. Prerequisites, elementary trigonometry and physics.

81.—GENERAL ASTRONOMY II. Three hours credit. Second semester, at 10:30. A continuation of 80.

82.—SPHERICAL AND PRACTICAL ASTRONOMY I. Two hours credit. One lecture and one laboratory period during the first semester, by appointment. Transformation of coördinates, time, sextant, transit, refraction. Prerequisites, descriptive astronomy, trigonometry, and calculus.

Stouffer.

83.—SPHERICAL AND PRACTICAL ASTRONOMY II. Three hours credit. One lecture and one laboratory period during the second semester, by appointment. A continuation of 82.

84.—INTRODUCTION TO ASTROPHYSICS. Three hours credit. First semester, by appointment. A study of the principles, methods and instruments employed in investigating the physical conditions of celestial bodies. Prerequisites, astronomy 10, physics 5 and 6 or equivalent, and the calculus.

85.—THEORETICAL ASTRONOMY. Three hours credit. Second semester, by appointment. Methods of computing the orbits of planets and comets. Prerequisites, astronomy 10, and the calculus.

86.—PRACTICAL WORK IN COMPUTING. Two hours credit. To be taken in conjunction with 85.

PHYSIOLOGY.

Professors: HYDE, STOLAND, MATTHEWS.

Instructor: WALLING.

EQUIPMENT. The department occupies the second floor of Medical Hall and one room in Fraser Hall. The laboratory and research rooms are well equipped with suitable tables and supplied with gas, water, and electrical circuits. The equipment of apparatus, glassware, and chemicals is adequate for ordinary demonstration and laboratory work in general physiology, and for some lines of research. The department library contains the more important reference books and complete files of the leading physiological journals.

ADVICE AS TO CHOICE OF COURSES. Physiology 1 and 2 cover the field of physiology in an elementary way, and are intended for students who are not prepared to pursue advanced courses in physiology, but desire some knowledge of the subject. Course 1 includes such topics as are most desirable for those who do not care to take more than one course in physiology. Students who are making the biological sciences their major study and are prepared in chemistry and physics are advised to select their work from courses 50, 51, 60, 61, and 70. Students who wish to make physiology their major study should have had physics, chemistry (including elementary organic chemistry), zoölogy, and either comparative anatomy or human anatomy. The required number of hours may be selected from courses 50, 51, 52, 53, 60, 61, 62, and 70.

1. ELEMENTARY PHYSIOLOGY. Five hours credit. Both semesters. Recitations, M. W. F., at 8:30, 10:30, or 1:30. Laboratory, Tu., Th., 8:30 to 10:30, 10:30 to 12:30, or 1:30 to 3:30. A course dealing especially with the nourishment of the body. It will include a study of the properties of living matter, the foods and their digestion and absorption, the functions of blood, the organs of circulation and their activities, breathing and respiration, metabolism and excretion. Chemistry and physics are highly desirable antecedents to the course. Chemistry will be made a prerequisite after 1917-'18. Stoland, Walling.

2.—ELEMENTARY PHYSIOLOGY. Five hours credit. Both semesters. Recitations M. W. F., 8:30. Laboratory Tu. Th., 8:30 to 10:30. A continuation of course 1. It includes a study of muscles, heat regulation, nerve, reflexes, brain, special senses, and the glands of internal secretion. Stoland, Walling.

10.—HYGIENE AND SANITATION. Three hours credit. Both semesters; Tu. 2 hours, Th. 1 hour, 3:30. Lectures, demonstrations, laboratory work, and recitations. A general survey of ventilation, heating, water supply, garbage and sewage, food and dieting, personal, industrial, school and military hygiene, habitations, vital causes of disease, disinfection and quarantine. Hyde.

50.—ADVANCED PHYSIOLOGY I. Five hours credit. Both semesters. Recitations, M. W. F., at 2:30. Laboratory by appointment. Lectures, recitations, conferences, journal club, and laboratory experimental work, pertaining to the functions of the human body. Designed for those who wish to teach and to specialize in the subject. Prerequisites: chemistry, physics, biology; recommended: physiology 1 or 2 or their equivalents. Hyde.

51.—ADVANCED PHYSIOLOGY II. Five hours credit. Both semesters. A continuation of, but not necessarily preceded by course 50. Prerequisites as for 50. Hyde.

60.—NUTRITIONAL PHYSIOLOGY. Five hours credit. First semester. Lectures, demonstrations, and recitations, M. W. F., at 9:30. Laboratory, four hours by appointment. A study of the functions of the body that have to do especially with the nourishment of the organism. Prerequisites: physics, zoölogy, and chemistry. A course in organic chemistry is recommended as an antecedent. Stoland.

61.—EXPERIMENTAL PHYSIOLOGY. Three hours credit. Second semester. Two laboratory periods and one hour conference per week, by appointment. A course intended to familiarize the students of physiology with the laboratory experiments on mammals and other animals. Prerequisite, any previous course in physiology. Stoland.

62.—PHYSIOLOGY OF THE ORGANS OF INTERNAL SECRETION. Second semester. Three to five hours credit. Hours by appointment. A course which includes a study of the organs of internal secretions and their relations to the body activities. Lectures, demonstrations, and laboratory work. Prerequisites: Courses 1 and 2, or any advanced course in physiology. Matthews and Stoland.

70.—MEDICAL PHYSIOLOGY. Five hours credit. First semester. Lectures and recitations, M. W. F. S., at 8:30. Laboratory, M. Tu., 9:30 to 12:30. A general course, primarily for medical students, covering the physiology of muscles, blood, circulation, respiration, glands of internal secretions, nervous system, and metabolism. Open to College students who have had preliminary training approved by the instructor.

Matthews.

PUBLIC SPEAKING.

Professor: MACMURRAY (Head of Department).

Instructor: BURNS.

EQUIPMENT. The special equipment of this department includes a collection of more than 200 books, to which carefully selected modern works dealing with debating and public addresses are added yearly. Through the courtesy of the Dean of the School of Law, rooms in Green Hall have been specially fitted for the work in public speaking, and the University chapel and other rooms are available for class recitations and individual practice. Moreover, the students in this department are urged to make constant use of books in the English, history, political science, economics, sociology, education, and other collections, as well as of the various current periodicals.

ADVICE AS TO CHOICE OF COURSES. The courses here offered are carefully articulated units, and are so arranged as to make possible a systematic study of public speaking. Students fitting themselves for the law or the ministry, for politics or social service, are urged to elect the entire series of courses offered. The University of Kansas participates in debates with the Universities of Nebraska, Oklahoma, Colorado, and Missouri. For these contests the courses in public speaking are designed to give preparation. Men desiring to win places on intercollegiate debating teams are advised to take as much of the work as possible, but especially to take course 52. The course in the principles of argumentation formerly given by this department has been transferred to the department of English, and may now be taken as course 3 in rhetoric. While it is not made a prerequisite, it is strongly advised as a preparation to course 52 in debating. In fact, students who have not had the course in argumentation must be able to satisfy this department in some other way of their preparation for course 52 in debating.

To facilitate the work of the courses in dramatic art, a small but neat and practical stage has been fitted up in room 3, Green Hall. In addition to the regular class work the rehearsals for class and dramatic club plays are held in this room.

1.—ORAL INTERPRETATION I.* Two hours credit. Both semesters. First semester, two sections, Tu. Th., at 8:30; M. W., at 10:30. The purpose of this course is to enable the student to attain to some proficiency in the art of oral interpretation of literature. In connection with the practice work upon the platform, the student will be given such points of theory as are necessary in regard to the development and use of the voice and in regard to proper platform deportment. MacMurray, Burns.

2.—ORAL INTERPRETATION II.* Two hours credit. Both semesters. Tu. Th., at 9:30; M. W., at 8:30. This course will be a continuation of course 1, and will afford a more advanced study of the art of oral interpretation. Prerequisite, course 1. MacMurray, Burns.

50.—EXTEMPORE SPEAKING I. Two hours credit. Both semesters. First semester, three sections; Tu. Th., at 10:30, M. W., at 11:30, T. Th., at 2:30. Weekly addresses based on prepared outlines. Careful preparation of material is required; the plan of the speech is made in advance, but the choice of language is left for the moment of speaking.

MacMurray, Burns.

51.—EXTEMPORE SPEAKING II. Two hours credit. Both semesters. Tu. Th., at 11:30; M. W., at 9:30. A continuation of extempore speaking I; same methods, but work is of more advanced nature. Lectures by head of department, and attention given to solution of special problems in public speaking. Prerequisite, course 50. MacMurray, Burns.

52.—DEBATING I. Two hours credit. First semester, two sections; M., 3:30 to 5:30; Tu., 3:30 to 5:30. Practical work in brief drawing and the handling of evidence, together with presentation in actual debate. The class is limited in number, and the course can be taken only with the consent of the instructor. It is recommended that course 3 in rhetoric be taken before or in connection with this course. Burns.

53.—DEBATING II. Two hours credit. Second semester, by appointment. This course is open only to members of the University Debating Squad, and consists in preparation for the University Intercollegiate Debates. Burns.

54.—ADVANCED PUBLIC SPEAKING. Two hours credit. Second semester, M. W., at 11:30. In addition to the regular class instruction, special instruction will be given in preparing lectures and recitals for the public platform. A carefully prepared production of some length will be required of each student by the end of the semester. Prerequisites, courses 1 and 2. MacMurray.

60.—DRAMATIC ART I. Two hours credit. First semester, M., 3:30 to 5:30. Training in the interpretation of the drama and instruction in stage technique. Standard and classic plays will be studied and presented, and each student will be assigned definite roles to interpret. Prerequisite, course 1 or its equivalent. MacMurray.

61.—DRAMATIC ART II. Two hours credit. Second semester, M., 3:30 to 5:30. A continuation of course 60. The work will be similar in character but of a more advanced nature. Prerequisite, course 60. MacMurray.

ROMANCE LANGUAGES AND LITERATURES.

Professor: GALLOO (Head of Department).

Associate Professors: NEUENSCHWANDER, OWEN.

Assistant Professors: WINTER,† COWPER, SKIDMORE, STANTON.

Instructors: GARDNER, SABY, GUTIÉRREZ, APPELBOOM, HOFFMANN, DA CRUZ, MOLINA.

EQUIPMENT. The department of Romance languages and literatures possesses a collection of illustrative material consisting of several hundred photographs, stereopticon slides, maps, plans, plaster casts, etc., illustrating the history, architecture, life, and general culture of the Romance nations.

The Romance library of the University contains 4850 volumes, which cover in a representative way the literary development of France, Spain, and Italy, from the earliest times to the present day, and the greater monuments of Portuguese literature. Thirty-four periodicals are received, which include all the important literary and philological journals devoted to the Romance languages.

ADVICE AS TO CHOICE OF COURSES. A major in Romance languages with emphasis on French includes, as prescribed courses, French 3, 4, 6, 10, two courses in French literature, one of which must be 54, and Spanish 71; as suggested courses within the department, Spanish 72, Italian, or French courses in language or literature, according to the purpose of the student.

† Absent on leave.

A major in Romance languages with emphasis on Spanish includes, as prescribed courses, Spanish 23, 24, 25, 74, 75, and French 51 and 52; as suggested courses within the department, further courses in Spanish, French or Italian.

All students whose major is in Romance languages are advised to elect courses in mediæval and modern European history, and in the history of English literature.

Those who intend to take up the study of historical development of any of the Romance languages must be well grounded in Latin and have a reading knowledge of German, and if they purpose to teach, should take, in addition to the required work in education, the course in oral composition in the language in which they are specializing.

Graduate work in this department presupposes acquaintance with elementary Spanish and Italian.

FRENCH.

1.—ELEMENTARY FRENCH. Five hours credit. First semester, at 8:30, 9:30, 10:30, 11:30, and 1:30; second semester, at 8:30, 9:30, 11:30, and 2:30. Grammar (Fraser and Squair) and easy reading. Drill in pronunciation, accidence and elementary syntax. Prerequisite, three years of foreign language. Students who have had less than three years of foreign language form a section reciting at 8:30.

NeuenSchwander, Cowper, Skidmore, Stanton, Appelboom, Hoffman.

2.—FRENCH READING AND GRAMMAR. Five hours credit. Second semester, at 8:30, 9:30, 10:30, 11:30, and 1:30; first semester, at 8:30, 10:30, and 2:30. Reading of simple prose texts, with exercises in dictation and elementary composition. Prerequisite, course 1.

NeuenSchwander, Cowper, Skidmore, Stanton, Appelboom, Hoffman.

3.—MODERN FRENCH WRITERS. Three hours credit. Both semesters, at 9:30 and 1:30. Translation and reading of works of Mérimée, George Sand, Victor Hugo, Anatole France, and René Bazin. Prerequisite, course 2.

NeuenSchwander, Cowper, Stanton, Hoffman.

4.—FRENCH COMPOSITION. Two hours credit. Both semesters, at 9:30 and 1:30. Written exercises for grammatical review; free composition; oral exercises; dictation. May be taken in conjunction with course 3 or course 6.

NeuenSchwander, Cowper, Stanton, Hoffman.

5.—SCIENTIFIC FRENCH. Three hours credit. First semester, by appointment. Open to students who are specializing in the sciences and who need an accurate and ready understanding of scientific French. Prerequisites, courses 1 and 2.

Gardner.

6.—FRENCH PROSE AND POETRY. Three hours credit. Both semesters, at 10:30. Reading of representative works of the seventeenth, eighteenth and nineteenth centuries. Prerequisites, courses 3 and 4; may be taken in the same semester as course 4.

NeuenSchwander, Ward, Stanton.

7.—FRENCH COMPOSITION. Two hours credit. Both semesters, by appointment. A continuation of course 4, intended to provide additional practice in writing and speaking French.

Cowper, Stanton.

8.—CORNEILLE AND RACINE. Two hours credit. Both semesters, by appointment. Reading of three or four of the greatest tragedies of each poet. Must be preceded by 3 and 4, and should be by 6.

Galloo, Stanton.

9.—ORAL FRENCH COMPOSITION. Three hours credit. Daily, second semester. This course is conducted entirely in French, and the idiomatic use of the spoken tongue is emphasized. Regular attendance at the meetings of the Cercle Français is expected of the students who elect this course. Must be preceded by 3 and 4, and preceded or accompanied by either 6 or 8, or their equivalents.

Stanton, Hoffman.

10.—MOLIÈRE. Three hours credit. First semester, at 11:30. Careful study of the more important plays, rapid reading of the others; reports in French by members of the class. Should be preceded by 6 or its equivalent. Galloo.

11.—FRENCH COMPOSITION, WRITTEN AND ORAL. Two hours credit. First semester, by appointment. Practice in writing and speaking French. Stanton.

12.—ADVANCED FRENCH COMPOSITION. Two hours credit. Second semester, by appointment. Translation, original composition, and practice in speaking French. Prerequisite, course 7 or 11. Galloo.

50.—THE FRENCH ELEMENT IN ENGLISH. Three hours credit. Second semester, by appointment. A study of the influence of French upon the vocabulary and syntax of the English language, with especial reference to Norman and post-Norman periods. The course will be conducted in English. NeuenSchwander.

51.—FRENCH I. Five hours credit. First semester, at 10:30. For Juniors and Seniors who are beginning French. The aim of this course is to give some insight into the fundamental principles of language, together with a more comprehensive acquaintance with French and wider reading than in the usual elementary courses for Freshmen and Sophomores. Galloo.

52.—FRENCH READING AND GRAMMAR. Five hours credit. Second semester, at 10:30. A continuation of course 51. Galloo.

53.—HISTORY OF EARLY FRENCH LITERATURE. Three hours credit. First semester, by appointment. From the earliest times to the classic period. Lectures, recitations, and private readings. Galloo.

54.—HISTORY OF MODERN FRENCH LITERATURE. Three hours credit. Second semester, by appointment. From the beginning of the classic period to the present day. Lectures, recitations, and private readings. Stanton.

55.—FRENCH LITERATURE OF THE SEVENTEENTH CENTURY. Two hours credit. First semester, by appointment. A study of the development of French literature from Malherbe to the end of the reign of Louis XIV. Stanton.

56.—FRENCH LITERATURE OF THE EIGHTEENTH CENTURY. Two hours credit. Second semester, by appointment. Special attention is paid to the life and works of Voltaire; study of Montesquieu, Rousseau and the encyclopedists; the dramatists. NeuenSchwander.

57.—THE ROMANTIC SCHOOL I. Three hours credit. First semester, by appointment. A study of the rise of romanticism in France and of its characteristic products in poetry and the drama. Lamartine, A. de Vigny, and A. de Musset. Galloo.

58.—THE ROMANTIC SCHOOL II. Two hours credit. Second semester, by appointment. A continuation of course 57, devoted chiefly to Victor Hugo's works. Galloo.

59.—DEVELOPMENT OF THE FRENCH NOVEL I. Two hours credit. First semester, by appointment. A survey of the novel in the seventeenth and eighteenth centuries. Galloo.

60.—DEVELOPMENT OF THE FRENCH NOVEL II. Three hours credit. Second semester, by appointment. The novel in the nineteenth century, with special reference to the origin and growth of realism and naturalism. Galloo.

61.—THE FRENCH DRAMA. Three hours credit. Second semester, by appointment. A study of the development of the drama in France from its origin to the close of the nineteenth century. Lectures, recitations, and written reports. Galloo.

62.—OLD FRENCH. Two hours credit. First semester, by appointment. An introduction to French philology. Reading of the *Extraits de la Chanson de Roland* (Gaston Paris), with special attention to the phonetic changes and the inflections. Galloo.

63.—OLD FRENCH. Two hours credit. Second semester, by appointment. A continuation of course 62. *Chrestomathie de l'ancien français* (Constans). Galloo.

SPANISH.

21.—ELEMENTARY SPANISH. Five hours credit. First semester, at 8:30, 9:30, 10:30, 11:30, 1:30; second semester, at 8:30, 9:30, 11:30, and 1:30. An outline of grammar (Espinosa & Allen). Reading of short stories. Elementary composition. Prerequisite, three years of foreign language. Students who have had less than three years of foreign language form a section reciting at 1:30.

Skidmore, Stanton, Saby, Gutiérrez, da Cruz, Molina.

22.—SPANISH READING AND GRAMMAR. Five hours credit. Second semester, at 8:30, 9:30, 10:30, 11:30, 2:30; first semester, at 8:30, 10:30, and 2:30. Grammar and composition. Reading of easy modern prose: Carrión-Aza, Pérez Galdós, Ibáñez, Caballero, etc. Prerequisite, course 21.

Skidmore, Stanton, Saby, da Cruz, Molina.

23.—MODERN SPANISH WRITERS. Three hours credit. First semester, at 8:30 and 10:30; second semester, at 10:30. Translation and reading of representative works of Alarcón, Becquer, Pereda, Valera, Palacio Valdés. Prerequisite, course 22.

Skidmore, Gutiérrez, da Cruz.

24.—SPANISH COMPOSITION. Two hours credit. Both semesters, at 10:30. Systematic training in writing and speaking Spanish. Must be preceded or accompanied by course 23.

Skidmore, Gutiérrez, da Cruz.

25.—SPANISH PROSE AND POETRY. Three hours credit. Both semesters, at 2:30. Specimens of the work of the poets and prose writers of the eighteenth and nineteenth centuries. Must be preceded or accompanied by course 24.

Owen.

26.—ADVANCED SPANISH COMPOSITION. Two hours credit. Second semester, at 2:30. Translation into Spanish of English prose; original composition, and practice in speaking Spanish. Must be preceded or accompanied by course 25.

Owen, Molina.

27.—ORAL SPANISH COMPOSITION. Three hours credit. Daily, first semester, by appointment. This course is conducted wholly in Spanish, and the idiomatic use of the spoken tongue is emphasized. Must be preceded or accompanied by course 25.

Gutiérrez.

71.—SPANISH I. Five hours credit. First semester, at 1:30. For Juniors and Seniors who are beginning Spanish. The aim of this course is to give some insight into the fundamental principles of language, together with a more comprehensive acquaintance with Spanish and wider reading than in the usual elementary courses for Freshmen and Sophomores.

Owen.

72.—SPANISH READING AND GRAMMAR. Five hours credit. Second semester, at 1:30. A continuation of course 71.

Owen.

73.—DON QUIJOTE. Three hours credit. Second semester, by appointment. A careful reading of the first part, together with outside reading and reports covering the more famous chapters of the second part.

Skidmore.

74.—HISTORY OF EARLY SPANISH LITERATURE. Three hours credit. First semester, at 3:30. From the earliest times, through the classic period. Lectures, recitations, and private readings.

Owen.

75.—HISTORY OF MODERN SPANISH LITERATURE. Three hours credit. Second semester, at 3:30. From the classic period to the present day. Lectures, recitations, and private readings.

Owen.

76.—THE SPANISH NOVEL OF THE SIXTEENTH AND SEVENTEENTH CENTURIES. Two hours credit. First semester, by appointment. The *Novelas ejemplares* of Cervantes, *Lazarillo de Tormes*, and other picaresque novels. The Spain of the period. Lectures, collateral reading, and reports. Owen.

77.—THE CLASSIC SPANISH DRAMA. Two hours credit. Second semester, by appointment. Tirso de Molina, Lope de Vega, Calderón, and Ruiz de Alarcón. Careful study of selected plays from each dramatist; more rapid reading of others. Schack's Spanish Dramatic Literature. Owen.

ITALIAN.

Students are advised to take, as preparation, courses 1 and 2 or 51 and 52 in French.

31.—ELEMENTARY ITALIAN I. Three hours credit. First semester, by appointment. Grammar. Reading, Marinoni's Reader. Cowper.

32.—ELEMENTARY ITALIAN II. Continuation of course 31. Three hours credit. Second semester, by appointment. Grammar, composition, and reading of works of Manzoni, Edmondo de Amicis and other modern writers. Cowper.

33.—ITALIAN GRAMMAR AND READING. Two hours credit. First semester, at 1:30. Grammatical exercises accompanying the reading and translating of works of Goldoni, Fogazzaro, Carducci, Pascoli. Prerequisite, course 32. Cowper.

34.—WRITERS OF THE CINQUECENTO. Two hours credit. Second semester, at 1:30. Reading of selections from Machiavelli, Cellini, Ariosto, Tasso, etc. D'Ancona and Bacci's *Manuale della letteratura italiana*, vols. II and III. Prerequisite, course 33. Cowper.

80.—DANTE. Three hours credit. First semester, by appointment. The *Divina Commedia*; its relation to the age, and its importance in the history of the Italian language and literature. Prerequisite, course 33. Cowper.

PORTUGUESE.

90.—ELEMENTARY PORTUGUESE. Three hours credit. First semester, by appointment. Branner's Grammar and easy reading. Open to students who have had at least ten hours of French or Spanish. Da Cruz.

91.—PORTUGUESE READING, SPEAKING AND WRITING. Three hours credit. Second semester, by appointment. A continuation of course 90. Da Cruz.

RUSSIAN.

95.—RUSSIAN LANGUAGE I. Three hours credit. First semester.

Saby.

96.—RUSSIAN LANGUAGE II. Three hours credit. Second semester.

Saby.

SOCIOLOGY.

Professor: BLACKMAR (Head of Department.)

Associate Professor: HELLEBERG.

Assistant Professor: ELMER.

Instructor: BODENHAFFER.

Lecturer: DEACON.

EQUIPMENT. Instruction in the department of sociology is conducted chiefly by lectures, reading, recitation, and investigation, aided in the elementary courses by textbooks. The University library is well equipped for the study of sociology. All of the principal magazines treating of the work of this department are on file in the reading room for the use of the students. In addition there are charts, maps, and outlines. In the natural history museum is a valuable collection of specimens for the

study of anthropology and ethnology. A limited amount of investigation of social and racial conditions is being carried on.

ADVICE AS TO COURSES. Elements of sociology as found in course 1 or 50 or their equivalent is a prerequisite to further work in the department. At the beginning of the Junior year students desiring to major in sociology should consult with an instructor in the department in regard to choice of courses for the required major work.

The development of professional social work in this country opens up an attractive field for university men and women. The courses offered by this department are, therefore, of definite interest to those preparing to become workers in social settlements, secretaries of private charities, welfare secretaries in industries, staff sociologists in our state charitable and penal institutions, city superintendents of public welfare, recreation directors, and playground and social center workers. Experience has demonstrated that the study of sociology is a valuable preparation for teaching.

Suggested courses for training for social service (elements of sociology a prerequisite):

I. *Training for social service in urban communities.* 59, Ethnology; 61, Contemporary Society; 51, Applied Sociology; 52, Social Pathology; 53, Remedial and Corrective Agencies; 64, Municipal Sociology; 55, Psychological Sociology; Social Surveys; 107, Criminology (graduate); Immigration and Race Problems. Students should elect additional courses in economics and political science.

II. *Training for social service in rural communities.* 60, Rural Sociology; 51, Applied Sociology; 56, The Family; 55, Psychological Sociology. Students should elect certain courses in economics and physical education.

III. *Training for social service in institutions.* 58, Anthropology; 52, Social Pathology; 53, Remedial and Corrective Agencies; 51, Applied Sociology; Vital Statistics; 107, Criminology (graduate); 103, Institutional and Social Service.

IV. *Training in preparation for the ministry, law, and medicine.* 58, Anthropology; 59, Ethnology; 56, The Family; 61, Contemporary Society; 54, Public Opinion; 55, Psychological Sociology; 57, Socialism; Vital Statistics.

V. *Training in preparation for teachers.* 61, Contemporary Society; 56, The Family; 52, Social Pathology; 53, Remedial and Corrective Agencies; 51, Applied Sociology; 55, Psychological Sociology; 54, Public Opinion.

1.—ELEMENTS OF SOCIOLOGY.* Three hours credit. Both semesters, at 8:30 and 1:30. A general course in the foundations and principles of sociology, including a study of the origin, evolution, structure, organization and activities of society. The course is especially arranged for those who have not previously studied sociology. Prerequisite to all courses except 50. Elmer and Bodenhafer.

50.—ELEMENTS OF SOCIOLOGY. Two hours credit. Both semesters, at 10:30. The same as course 1, except more difficult and greater emphasis on pure sociology and social theory. Either 50 or 1 prerequisite to other courses. Blackmar.

51.—PRINCIPLES OF APPLIED SOCIOLOGY. Three hours credit. Second semester, at 8:30. An application of the theories and principles studied in courses 1 and 50 to social activities. A special study of social energy and social waste, with methods of conservation of social energy and elimination of social waste. Elmer.

52.—SOCIAL PATHOLOGY. Two hours credit. First semester, at 11:30. A general study of poverty, pauperism, unemployment, epilepsy, insanity, degeneracy, etc., and their causes, prevention, and cure. Conditions of the slums and rural population, housing of the poor, social maladjustment, occupational diseases, etc. Bodenhafer.

53.—REMEDIAL AND CORRECTIVE AGENCIES. Two hours credit. Second semester, at 11:30. Administration of charitable and correctional affairs; management of jails, reformatories, penitentiaries, and institutions for defectives and dependents; housing of the poor. Each student is required to visit at least two social institutions and report on same.

Bodenhafer.

54.—PUBLIC OPINION. Three hours credit. Second semester, at 2:30. A study of the origin and development of social control; public opinion and democracy; leadership and authority; phenomena of the public or ethnic mind; the relations of the individual and the group. Helleberg.

55.—PSYCHOLOGICAL SOCIOLOGY. Five hours credit. First semester, at 1:30. A study of the social self and the process of its development, together with applications to a variety of social problems, in order to establish a viewpoint and method for sociology and all the social sciences.

Helleberg.

56.—THE FAMILY. Two hours credit. Second semester, at 2:30. The origin and growth of the family. The true family a biological, psychological and moral unity. Psychology of family life.

Helleberg.

57.—SOCIALISM. Two hours credit. First semester, at 2:30. The development of modern socialistic theories, including a study of French and German socialism. The development of the socialistic movement.

Helleberg.

58.—GENERAL ANTHROPOLOGY. Two hours credit. First semester, at 8:30. The natural history of man. The probable origin and antiquity of man. Comparison with anthropoid apes. Man's physical, social, and mental characteristics. Evidences of Tertiary man. The beginnings of art and industry. The origin and development of languages.

Blackmar.

59.—ETHNOLOGY. Two hours credit. Second semester, at 8:30. Origin of races and ethnic groups. Racial differentiation and development. Characteristics of ethnic society. The conflict and survival of races. Their geographical distribution. Influence of geographical and physical environment. Comparison of natural and civilized races.

Blackmar.

60.—RURAL SOCIOLOGY. Two hours credit. Second semester, at 9:30. A study of social conditions in rural districts and small towns. The agencies for social and economic betterment. The church and the school-house as social centers. Political, social, and economic organizations.

Elmer.

61.—CONTEMPORARY SOCIETY IN THE UNITED STATES. Three hours credit. First semester, at 2:30. A general survey of the natural environment, population and its distribution, industrial and social grouping, and is designed through the study of current concrete social problems as a means of correlating the various social sciences.

Helleberg.

62.—DEVELOPMENT OF SOCIAL THEORY. Five hours credit. Second semester, at 1:30. A rapid historical survey of social philosophy from Plato to Comte, followed by a more detailed examination of current sociological theories. Primarily a graduate course, but open to Seniors by permission of the instructor.

Helleberg.

63.—SOCIAL SURVEYS. Two hours credit. First semester, at 10:30. The history of the social survey. The social survey as a method of social investigation and of social statistics. This course is designed not only to present the literature of surveys, but to give the student the principles and practice of social surveys.

Elmer.

64.—MUNICIPAL SOCIOLOGY. Two hours credit. First semester, at 9:30. A study of the population, conditions of life, and social problems in the modern city with special reference to American municipalities. This course is a special study of city problems for students preparing for social work.

Elmer.

65.—IMMIGRATION AND RACE PROBLEMS IN THE UNITED STATES. Three hours credit. First semester, at 9:30. The underlying social causes of population movement; social factors in the distribution of immigrant population; assimilation; social problems involved in the contact of races and peoples; effect upon social institutions; methods of readjustment and control. Elmer.

66.—VITAL STATISTICS. One hour credit. Second semester, Wednesday, at 10:30. Vital Statistics, social sanitation, movement of population in registration areas, mortality statistics, disease, etc. Deacon.

ZOOLOGY.

Professor: ALLEN (Head of Department).

Associate Professor: BAUMGARTNER.

Assistant Professors: ROBERTSON, NOWLIN, DOUTHITT.

Assistant Instructor: O'ROKE.

Preparator and Demonstrator: BROWN.

The department is in possession of ample facilities in the way of apparatus and laboratory material. There are representative types of marine animals from the Pacific and the Atlantic coasts, as well as from Bermuda and Jamaica. Historical, cytological and embryological material of great variety has been provided. Microscopes, microtomes, and other apparatus for even the most advanced work are at hand.

ADVICE CONCERNING CHOICE OF COURSES. Course 1 is designed as an introduction to the subject, and, so far as possible, gives a general survey of the animal kingdom. The character of the work is such as to lay particular stress upon training in the independent observation and correlation of facts. It is, therefore, a course which may be taken by those who wish merely to gain a general idea of zoölogy and also by those who wish to become acquainted with the methods of scientific work. As an elementary course it forms a basis for any advanced work, and is required for entrance into the other courses, except 51 and 52, 61, and 64.

MAJOR REQUIREMENTS. In the work counting toward a major students must complete ten hours chosen from among the following courses: 53, 54, 55, 56, and 71.

1.—ELEMENTARY ZOÖLOGY. Five hours credit. First semester, laboratory, M. W. F., 8:30 to 10:30, 10:30 to 12:30, or 1:30 to 3:30; recitations and lectures, Tu. Th., 11:30, or 2:30. Second semester, laboratory, 8:30 to 10:30, or 10:30 to 12:30; recitations and lectures, 9:30 or 11:30. A study of biological principles as illustrated in the animal kingdom as a whole. The laboratory work is designed to give training in methods of scientific observation and interpretation. Fee, \$2.

2.—INVERTEBRATE ZOÖLOGY. Five hours credit, second semester. Laboratory M. W. F., 8:30 to 10:30. Lectures and reports T. Th., 8:30. The first of the semester is devoted to a study of the comparative anatomy of the invertebrates; the later portion to experimental work, especially to animal behavior as a study of reactions, reflexes, and instincts of lower forms. Prerequisite, Zoölogy I or equivalent. Fee, \$2. Nowlin.

3.—COMPARATIVE ANATOMY. Five hours credit. Second semester. Laboratory 1:30 to 3:30 or 3:30 to 5:30, M. W. F. Lectures 2:30 or 3:30, T. Th. A course dealing with the structure and relations of the vertebrates. It consists of a laboratory study of types, lectures, and assigned readings. This course is designed for premedical students, those intending to teach, and those desiring a general cultural course. Prerequisite, course 1 or its equivalent. Fee \$2.50. Baumgartner, Douthitt.

4.—DEVELOPMENT AND HEREDITY. Five hours credit. Second semester, laboratory, M. W. F., 10:30 to 12:20. Lectures, T. Th., at 10:30. A study of the general principles of embryonic development and their application to questions of heredity and eugenics. This course will incidentally involve training in microscope technique. Prerequisite, course 1 or equivalent. Fee, \$2. Allen, Robertson.

50.—ELEMENTARY ZOÖLOGY. Five hours credit. First semester, 8:30 to 10:30. A study of biological principles as illustrated in the animal kingdom as a whole. The laboratory work is designed to give training in methods of scientific observation and interpretation. This course is a duplication of course 1, and is not open to those who have taken the latter.

51.—ORNITHOLOGY. Three hours credit. Second semester, T. Th., 8:30, and by appointment. Field trips by appointment. A study of the birds of this vicinity. A list of the different species will be made by the students, and special attention will be given to living birds, notes being taken as to date of appearance, nesting habits, song, etc. The collections in the museum will be used. Fee, \$1. Douthitt.

52.—MAMMALS. Two hours credit. Second semester, M. W., 8:30 to 10:30. This course will be along lines similar to 51, being a study of local fauna together with the preparations in the museum. Fee, \$1. Douthitt.

53.—ANIMAL HISTOLOGY. Five hours credit. First semester, 3:30 to 5:30. The methods of preparation and a careful study of normal tissues constitute this course. Lectures, assigned readings, and laboratory work. Prerequisites, courses 1 and 3, or equivalents. Fee, \$2.50. Baumgartner.

54.—CYTOLOGY. Five hours credit. First semester, 8:30 to 10:30. General structure and functions of the cell in development and inheritance. Cell division; cell differentiation; the cell in growth and senescence; formation of germ cells; sex determination; fertilization, etc., with emphasis on chromosomes and other elements concerned in heredity. The structure of protoplasm is followed by tissue culture methods. Cytological technique. Prerequisite, 10 hours of zoölogy or equivalent. Fee, \$2.50. Robertson.

55.—EMBRYOLOGY—DESCRIPTIVE AND EXPERIMENTAL. Five hours credit. Second semester, 8:30 to 10:30. The first three-fifths of the semester will be devoted to a study of the development of the chick and pig. The remaining two-fifths to original work along lines of experimental embryology, largely upon the factors that govern or modify development. Prerequisite, 10 hours of zoölogy or equivalent. Fee, \$2.50. Allen.

56.—VERTEBRATE PALEONTOLOGY. Five hours credit. Second semester, 10:30 to 12:30. A course dealing with the anatomical characters which have marked the evolutionary stages in the geological history of vertebrates. Lectures, recitations, assigned readings, and laboratory work. Abundant material is at hand for the illustration of the course. Prerequisite, 10 hours of zoölogy. Geology 1 is recommended as further preparatory work. Fee, \$2.50. Douthitt.

57.—PARASITOLOGY. Three hours credit. First semester; lectures, M. W., at 1:30; laboratory, F., 1:30 to 3:30. Designed to meet the needs of those who study medicine or public-health problems, and those interested in agriculture. The class will be divided upon this basis into two sections for the consideration of the more specialized phases of the work. Prerequisite, course 1 or equivalent. Fee, \$1. Allen, Nowlin.

58.—SYSTEMATIC AND DESCRIPTIVE ZOÖLOGY. Five hours credit. First semester, by appointment. A classification of different groups of the fauna of this state. Prerequisite, courses 1 and 2 or 3. Fee, \$2.50. Douthitt.

60.—ANIMAL BIOLOGY. Three hours credit. First semester, at 8:30. This course is designed for those students who wish to study the general theories of animal biology beyond the point reached in the elementary course. Lectures, recitations, discussions, and assigned readings. Prerequisite, zoölogy 1 or equivalent in other biological sciences. Allen, Douthitt.

61.—ANIMALS OF THE PAST. Two hours credit. First semester, at 8:30. A consideration of the various types of extinct animals, with a discussion of the general processes of evolution through which the present forms of animal life have passed. This will be illustrated by the collections in the museum. Prerequisite, zoölogy 1 or equivalent. Douthitt.

64.—HEREDITY IN RELATION TO EUGENICS. Three hours credit. First semester, at 10:30. Lectures, assigned readings, and conferences. An exposition of the biological laws of eugenics with emphasis upon recent investigations in heredity. A course of special value to students of sociology, medicine, education, etc. Not open to those who have taken 4. Robertson.

71.—PROTOZOÖLOGY. Five hours. First semester, 10:30 to 12:30. A study of unicellular animals from the standpoint of their general biological relationships, structure, and economic importance. The first six weeks are devoted to the acquirement of methods in technique. Prerequisite, 10 hours of zoölogy or equivalent. Fee, \$2. Nowlin.

72a.—GENETICS. Three hours credit. Second semester, 1:30 to 3:30. Lectures, readings, and laboratory. A careful study of variation; the influence of heredity and the inheritance of acquired characters; the origin of new races; Mendelism; sex-linked inheritance and the inheritance of secondary sexual characters; problems of evolution in the light of experimental breeding. Prerequisite, course 1 or equivalent. Fee, \$1.50. Robertson.

72b.—ANIMAL BREEDING. Two hours credit. Second semester. Lectures, T. and Th., at 1:30. Laboratory work, one hour a week, by appointment. A study of the races and breeds of domestic animals, their origin, the history of their association with man, and the principles of breeding used in their improvement. Should be taken in connection with botany 60 and entomology 60. Prerequisite, course 1 or equivalent. Robertson.

73.—ZOÖLOGICAL PROBLEMS. Three or five hours credit. Both semesters, by appointment. This course is designed to provide for the continuation of work of an essentially original character begun in some preceding course. It is to be taken under the direction of the teacher under whom the work was begun. Fee, \$1.50 or \$2.50. The staff.

SECTION IV.
School of Engineering.

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FACULTY.

FRANK STRONG, Ph. D., Chancellor of the University, and President of the Faculties.

PERLEY F. WALKER, M. M. E., Dean of the School of Engineering, and Professor of Mechanical Engineering.

ERASMUS HAWORTH, Ph. D., Professor of Geology and Mineralogy.

WILLIAM A. GRIFFITH, Professor of Drawing and Painting.

JAMES NAISMITH, M. D., Professor of Physical Education.

GEORGE C. SHAAD, E. E., Professor of Electrical Engineering.

FREDERICK E. KESTER, Ph. D., Professor of Physics.

HAMILTON P. CADY, Ph. D., Professor of Chemistry.

HENRY W. HUMBLE, A. M., Professor of Law.

HERBERT A. RICE, C. E., Professor of Mechanics and Structural Engineering.

GOLDWIN GOLDSMITH, Ph. B., Professor of Architecture.

FRANK B. DAINS, Ph. D., Professor of Chemistry.

CLEMENT C. WILLIAMS, C. E., Professor of Railway Engineering.

JOHN N. VAN DER VRIES, Ph. D., Professor of Mathematics.

CHARLES H. ASHTON, Ph. D., Professor of Mathematics.

ARTHUR C. TERRILL, E. M., Professor of Mining and Ore Dressing.

WILLIAM A. WHITAKER, A. M., Associate Professor of Metallurgy.

FREDERICK H. SIBLEY, M. E., Professor of Mechanical Engineering.

MARTIN E. RICE, M. S., Associate Professor of Physics.

GEORGE J. HOOD, B. S., Associate Professor of Mechanical Drawing.

CHARLES A. HASKINS, B. S., Associate Professor of Sanitary Engineering.

FREDERICK N. RAYMOND, A. M., Associate Professor of Rhetoric.

HERMAN C. ALLEN, Ph. D., Associate Professor of Chemistry.

WILLIAM C. MCNOWN, B. S., Associate Professor of Civil Engineering.

ALFRED H. SLUSS, B. S., in M. E., Associate Professor of Mechanical Engineering.

EDWIN F. STIMPSON, B. S., Assistant Professor of Physics.

CHARLES COCHRAN, B. S., in M. E., Assistant Professor of Mechanical Drawing.

FRANK E. JONES, Assistant Professor of Pattern Making and Founding.

CLIFFORD C. YOUNG, M. S., Assistant Professor of Chemistry.

HERBERT E. JORDAN, Ph. D., Assistant Professor of Mathematics.

THEODORE T. SMITH, A. M., Assistant Professor of Physics.

PAUL V. FARAGHER, Ph. D., Assistant Professor of Chemistry.

JOHN D. GARVER, B. S., Assistant Professor of Mechanical Engineering.

FRANK L. BROWN, B. S., Assistant Professor of Mechanics.

WALTER S. LONG, A. M., Assistant Professor of Chemistry.

EDWARD M. BRIGGS,* A. M., Assistant Professor of German.

CALVERT J. WINTER,* Ph. B., Assistant Professor of Romance Languages.

HARRY A. ROBERTS, B. S., Assistant Professor of Civil Engineering.

* Absent on leave, 1916-'17.

- JOSEPH E. WELKER, M. of C. E., Assistant Professor of Sanitary Engineering.
- JACOB O. JONES, M. S., Assistant Professor of Hydraulics.
- FREDERICK W. BRUCKMILLER, A. B., Assistant Professor of Chemistry.
- JOHN J. WHEELER, A. B., Assistant Professor of Mathematics.
- SOLOMON LEFSCHETZ, Ph. D., Assistant Professor of Mathematics.
- F. ELLIS JOHNSON, E. E., Assistant Professor of Electrical Engineering.
- RICHARD L. GRIDER, E. M., Assistant Professor of Mining Engineering.
- WINTHROP P. HAYNES, Ph. D., Assistant Professor of Geology, Mineralogy, and Petrology.
- CHARLES B. HARRISON, A. B., Assistant Professor of Physical Education.
- MAY GARDNER,* A. B., Instructor in Romance Languages.
- HUBERT WILTFONG, Instructor in Forging.
- SARA G. LAIRD, A. B., Instructor in Rhetoric.
- WINFRED W. HAWKINS, A. M., Instructor in German.
- OSCAR ROCKLUND, Instructor in Foundry.
- JOHN B. WHELAN, A. M., Instructor in Chemistry.
- IVAN P. PARKHURST, B. S., Instructor in Chemistry.
- CHARLES W. WHITE, Instructor in Machine Shop.
- CLARENCE ESTES, B. S., in Chem. Eng., Instructor in Chemistry.
- ARTHUR W. LARSEN, A. M., Instructor in Mathematics.
- LAURENS E. WHITTEMORE, A. M., Instructor in Physics.
- HARRY M. CURFMAN, B. S., Instructor in Electrical Engineering.
- OSCAR L. MAAG, B. S., Instructor in Chemistry.
- CLIFFORD W. SEIBEL, B. S., Instructor in Chemistry.
- ANNA G. SABY, A. M., Instructor in Romance Languages.
- ELMER E. HARTMAN, B. S., Instructor in Electrical Engineering.
- MILES L. HANLEY, A. M., Instructor in Rhetoric.
- SANTIAGO GUTIÉRREZ, Instructor in Romance Languages.
- WENDELL M. LATIMER, A. B., Assistant Instructor in Chemistry.
- LA FORCE BAILEY, A. M., Assistant Instructor in Architectural Engineering.
- LAWRENCE A. HARTLEY, Assistant Instructor in Machine Shop Practice.
- JAMES W. ORTON, Assistant Instructor in Engineering Drawing.

LECTURERS.

- J. A. L. WADDELL, D. Sc., L. L. D., Consulting Engineer, Kansas City, Mo., Lecturer on Economics of Engineering.
- JOHN S. WORLEY, B. S., M. S., member of Valuation Committee, Interstate Commerce Commission. Lecturer on Transportation.

ADMINISTRATIVE COMMITTEE.

- | | |
|---|-----------------|
| P. F. WALKER, <i>Chairman.</i> | G. GOLDSMITH. |
| C. H. ASHTON, <i>Secretary.</i> | A. C. TERRILL. |
| G. C. SHAAD. | M. E. RICE. |
| H. A. RICE. | W. A. WHITAKER. |
| G. J. HOOD, <i>Chief Adviser of Freshmen.</i> | |

* Absent on leave, 1916-'17.

School of Engineering.

ORGANIZATION AND PURPOSE.

The School of Engineering was organized as a distinct school of the University in 1891. Prior to that time, for eighteen years, courses in engineering had been given under the collegiate department, mainly in the civil and electrical branches.

Technical work is given in eight departments, entirely within the control of the School. Departments of the College of Liberal Arts give courses in science, mathematics, language, and economics for engineering students. The curriculum includes definitely scheduled work leading to degrees in the main branches of engineering—civil, electrical, mechanical, mining, chemical, and architectural—with options under the civil in railway, structural, and sanitary engineering. Provision is made also for those who desire a training for business and administrative work based upon engineering.

The requirements for graduation emphasize the fact that a thorough grounding in the fundamental sciences, mathematics, and language is essential to successful engineering practice. This idea is then extended by introducing a moderate amount of specialized work in the Junior and Senior years, but the aim throughout is to develop the principles underlying technical engineering work rather than to make direct applications. It will be observed, moreover, that the requirements for graduation call for about twenty credit hours more than are required for a degree in pure science or arts, and this excess is in the nature of practice work in shop, field, and drawing room. By these three methods the purpose of the School is shown, namely, to give the basis of a liberal education while providing for training in specialized professions, and to give sufficient practice work and familiarity with operating methods to enable the graduate to make himself useful to employers while he is gaining the broader experience necessary to a successful engineering career.

FIVE-YEAR COURSES.

In order to give greater emphasis to the value of general educational training for engineers, provision has been made for students so desiring to spend one year in the College of Arts and Sciences, and then to enter the School of Engineering for four years of study, making up a total of five years in the University. The conditions under which this may be done, and statements as to the degree conferred on completion of the work, are given in the following pages. The amount of technical work required is practically the same as in the regular four-year courses, but opportunities are offered for selecting a wider range of studies, and so providing for a broader education. Young men just graduating from high school are strongly urged to adopt this plan of procedure.

The leading characteristics of the several branches are noted in the following outlines:

Civil Engineering.

In the professional work emphasis is laid on surveying and field methods; on mechanics and the application to the designing of steel and concrete structures; on railway location and construction; on hydraulics, and the application to irrigation, canal, and power work; and on water

supply and other municipal problems, including pavement and highway construction. Particular emphasis is given to the training of men for the three important branches: namely, railway, structural, and sanitary engineering. For each of these a special schedule for the work of the Senior year will be found in the following pages.

Electrical Engineering.

The specialized studies under this heading follow the fundamental work in physics and machine elements. They give emphasis to the methods of design, construction, and operation of electrical equipment of all kinds as employed for the production, distribution, and application of electrical energy, and in telephone service. Much emphasis is laid on the fundamental principles of mechanics and electricity, and on laboratory practice in handling standard apparatus. Original investigation is encouraged in every way possible.

Mechanical Engineering.

In the professional work especial emphasis is placed on machine construction and design, the properties of materials, power generation with heat engines, and general manufacturing methods. Options in the Senior year permit specialization to a limited degree, so that the student may give his attention to that line in which he develops the greatest interest. The aim is to give the training which will permit the graduate to perform successfully the work required of the technical designer and administrator in manufacturing industries.

Mining Engineering.

In this branch professional work depends more directly upon chemistry and geology, and more work is required in these fundamentals than in the other branches already mentioned. Following this the professional work is of two kinds—first, that which bears upon the actual development and operation of mines, including the methods of administration; second, that which bears upon the treatment of the mine product in the various milling and smelting processes. It is the aim to emphasize the scientific principles involved, and so make it possible for the graduate to begin his later specialization successfully in any one of the many lines of work within the broad range of the mining industry.

Chemical Engineering.

In this branch opportunity is given for specialization in technical chemistry, with the aim to combine the ability to perform chemical work with training in the fundamentals of engineering. It is expected that students are fitting themselves for positions as chemists and superintendents of manufacturing plants where the work is based on chemical science. These include many industries, such as those involving iron and steel, smelting, refining, bleaching and dyeing processes, and the manufacture of many specialized products.

Architectural Engineering.

Much is included in this branch which involves the artistic as well as the utilitarian in building design and construction. It is recognized that architecture is essentially a fine art, but that this should be combined with the scientific and technical training which will enable the graduate to deal with the engineering side of construction work. The professional work given includes thorough instruction in the history and theory of architecture and in the principles of design. It is the aim to give such training as will enable the graduate to render efficient service while he is supplementing his school training by experience gained in office practice.

Engineering and Administrative Science.

Arrangements have been perfected whereby the College departments of economics, history, and sociology cooperate with the School of Engineering in offering work to fit men for positions in the administrative offices of manufacturing companies and in the transportation departments of railroads. Both the College student and the engineering student may profit by the plan.

The student who has started in engineering may begin to vary the regular schedule of studies during his second year, and may, under the advice of a committee of the Faculty, arrange to substitute from twenty to twenty-five hours of courses in the College departments indicated in place of the more highly specialized engineering work. The student is trained, therefore, in all the fundamentals of engineering, and should be well fitted to take positions in offices where the work depends largely upon technical phases of the industry in question. A more detailed statement of the work will be found in the following pages under the heading "Curriculum."

DEGREES GRANTED.

All graduates of the School of Engineering are admitted to the degree of bachelor of science in engineering or bachelor of science. The first is given to those who have completed the work laid out on the regular four-year plan, based on entrance from the accredited high schools. The second is given to those who enter the School of Engineering after having completed thirty hours of work in the College of Arts and Sciences, and to those who complete the work offered in engineering and administrative science.

All graduates of the School of Engineering may enter the Graduate School of the University and become candidates for the degree of master of science under the regulations there in force.

Graduates in engineering from this school, and those who have received the master's degree for advanced study in engineering under the Graduate School, are eligible to the professional degrees of Civil Engineer, Electrical Engineer, Mechanical Engineer, Engineer of Mines, Chemical Engineer, and Architectural Engineer, whichever is appropriate to the undergraduate work taken. Candidates for these degrees must have spent at least three years of actual time in professional practice in positions of responsibility, in the design, construction, or operation of professional works, and must furnish detailed and satisfactory evidence as to the nature and extent of this practice.

The candidate must submit a thesis, accompanied by detailed explanations, drawings, specifications, estimates, etc., and embodying the results of his own work or observation. If approved, the thesis, with all accompanying material, becomes the property of the University.

The thesis for any professional degree must be delivered to the Dean of the School of Engineering on or before May 15.

SCHOLARSHIP STANDING FOR GRADUATION.

In the General Information Section the system of grading is explained, there being four passing grades indicated by the letters A, B, C, and D. The last one, D, indicates a bare passing mark.

In the School of Engineering there is a regulation which limits the amount of barely passing grade work which will be accepted as credit toward a degree. Under this rule a student who has grade D in more than twenty-five per cent of his total hours will not be recommended for graduation unless his case is given special consideration by the school faculty. Such special consideration may be given him only in case he has secured grades better than D in fifty per cent of his hours of credit work in mathematics, physics, chemistry, geology, and all of the specialized engineering departments excepting shop work and drawing.

ADMISSION.

By act of the state legislature, all graduates of accredited high schools in Kansas are admitted to the Freshman class without examination.

Graduates of other preparatory schools will be admitted on such conditions as the Faculty may impose.

For the guidance of prospective students who desire to prepare themselves without graduating from accredited high schools an outline of preparatory studies which has been followed for many years is given below. A total of fifteen units must be offered for admission.

ENGLISH.—Rhetoric and English literature, 3 or 4 units. Three units required.

MATHEMATICS.—Elementary algebra, $1\frac{1}{2}$ units; plane geometry, 1 unit; solid geometry, $\frac{1}{2}$ unit; plane trigonometry, $\frac{1}{2}$ unit; advanced algebra, $\frac{1}{2}$ unit. Three units required to prepare for the regular engineering courses.

FOREIGN LANGUAGES.—Latin, 1, 2, 3, or 4 units; Greek, 1, 2, 3, or 4 units; German, 1, 2, 3, or 4 units; French, 1, 2, 3, or 4 units; Spanish, 1 or 2 units. Two units at entrance and ten hours of German, French, or Spanish in the University complete the requirements for graduation.

PHYSICAL SCIENCES.—Physical Geography, 1 or $\frac{1}{2}$ unit; physics, 1 unit; chemistry, 1 unit. One unit required.

BIOLOGICAL SCIENCES.—Botany, 1 unit; zoölogy, 1 unit; physiology, 1 or $\frac{1}{2}$ unit; biological science, 1 unit.

HISTORY AND SOCIAL SCIENCE.—Greek and Roman history, 1 unit; mediæval and modern history, 1 unit; English history, 1 unit; American history, 1 unit; economics, 1 or $\frac{1}{2}$ unit; civics, $\frac{1}{2}$ unit. Three units recommended.

MANUAL TRAINING.—Woodwork, forging, and machine tool work, 2 units; free-hand or mechanical drawing, 1 unit.

MISCELLANEOUS.—Stenography, $\frac{1}{2}$ unit; bookkeeping, $\frac{1}{2}$ unit; commercial law, $\frac{1}{2}$ unit; commercial geography, $\frac{1}{2}$ unit; agriculture, $\frac{1}{2}$ or 1 unit; psychology, $\frac{1}{2}$ unit; advanced arithmetic if taken after one year of algebra, $\frac{1}{2}$ unit. Not more than two units are allowed.

Entrance Examinations.

Candidates for admission who are not graduates of accredited Kansas high schools may offer themselves for examinations in subjects usually embraced in the high-school curriculum. Whenever a candidate has thus secured credit for the equivalent of the work included in the curriculum of the accredited high school he will be admitted to the Freshman class.

A schedule of these examinations will be found on page 49 of the General Information Section of the Catalog.

Inadequate Preparation.

When a student by his current work shows insufficient preparation for any course, he may be required to make good such deficiency in any manner prescribed by his instructor and approved by the Dean of the School.

Admission to Advanced Standing.

The regulations governing admission to advanced standing are administered by a committee of the University Senate, which examines into the merits of each case presented to it, and either credits the applicant with a certain rank or recommends him to the heads of departments for advanced credit or examination.

Application for such advanced standing must be made at the time of matriculation.

Undergraduates from other institutions must present certificates of honorable dismissal, or other satisfactory evidence of good character.

Admission to advanced standing may be secured in two ways:

BY EXAMINATION. A candidate may be admitted to the Sophomore, Junior, or Senior class, if he appears on examination to be prepared in the following studies: (1) In the studies required for admission to the Freshman class. (2) In all such studies as he would have pursued if he had entered at the beginning of the course, or such as are substantially equivalent thereto.

All applications for examination for advanced standing must be made during the opening week of the first term. Credit for work done in preparatory schools will be given upon examination only.

BY CERTIFICATE. Graduates or students from the higher classes of other engineering colleges may be admitted to advanced standing upon presentation of a certificate stating in detail the work done, under such conditions as the Faculty may determine to be just in each case, upon consideration of the applicant's previous course of study and of the evidence he presents of his proficiency in that course. Application for credits toward advanced standing in technical subjects should be made to the Dean of the School of Engineering.

Foreign Language Required for Graduation.

The total amount of work in foreign language which is required for graduation, both high-school credits and courses taken after entering the University being considered together, must be equivalent to twenty hours in University courses, of which at least ten hours shall be in one modern foreign language, excepting that a student entering without any foreign language need take only fifteen hours in the University, provided the entire time is given to a single foreign language. Each unit of entrance credit counts as five hours.

The curriculum (see page 188) calls for ten hours of modern foreign language in the Freshman year. In any case where a student is able to satisfy the foreign language requirements by taking a lesser number of hours than ten, he may substitute other University work for the number of hours remaining.

Mathematics Required for Graduation.

The total amount of work in mathematics which is required for graduation, both high-school credits and courses taken after entering being considered together, must be equivalent to thirty-two hours in University courses for civil-, electrical-, mechanical-, and architectural-engineering students, and twenty-nine hours for mining- and chemical-engineering students. Each unit of entrance credit counts as five hours. Students who present entrance credits amounting to more than fifteen hours, however, must complete the courses in calculus as prescribed in the curricula for the several branches.

Special Students.

Opportunity is given in the School of Engineering for the admission of persons of mature years who desire to pursue some special lines of work, without following any prescribed course of study or becoming candidates for a degree.

The admission of such special students is directly under the control of the Dean of the School of Engineering, whose certificate of acceptance must be presented to the Registrar before registration. Applicants for admission as special students must present satisfactory evidence of proper preparation for the courses desired, and must also meet other requirements as fixed by the Faculty.

Special students are subject to the same regulations as are regular students with regard to the quality of work performed and attendance at recitations and examinations, but not as to number of courses to be pursued.

If a special student later becomes a candidate for a degree, the credits he has received while enrolled as a special student will not be allowed to count towards this degree, except by the approval of the Faculty. In no case may a student be granted a degree until he has been enrolled for one year as a regular student.

Any one regularly enrolled in another school of the University may be admitted as a special student to engineering classes, but all applica-

tions for such enrollment must be accompanied by the recommendation of the dean of the school concerned.

REGISTRATION.

All candidates for admission having certificates from accredited schools and all students of the University intending to pursue their studies during the ensuing year should present themselves for registration at the University on September 17, 18, or 19, 1917.

Registration at a later date will be permitted only on the payment of a fee of one dollar.

ENROLLMENT.

After registration has been completed with the Registrar and fees have been paid, students should apply to the Dean for enrollment in their classes. Enrollment the first semester occurs September 18 and 19, 1917, and on the first day of the second semester.

Enrollment at a later date will be permitted only on the payment of a fee of one dollar.

Enrollment Regulations.

The amount of work to be carried by students is expected to conform to the lists printed in the curriculum on the following pages. The number of hours there indicated may not be exceeded unless by express permission of the Dean. Students who have shown inability to carry the full schedule, or who plan to devote time to remunerative work outside of school, are frequently obliged to restrict the number of hours carried to fifteen or even less.

Students are assigned to groups, each group being in the charge of a member of the Faculty who acts as adviser at enrollment and during the year. Students above the Freshman class are assigned to groups according to departments in which they are specializing. Advisers are expected to retain oversight over their charges, and reports on the current work of students are made to them at monthly intervals.

FEES AND EXPENSES.

Matriculation fee, for residents of the state.....	\$5.00
for nonresidents.....	10.00
Incidental fee per school year, for residents of the state.....	10.00
for nonresidents.....	20.00
Diploma fee, at graduation.....	5.00

Cost of Materials.

In all laboratory and shop courses the student is charged for the materials and supplies he consumes in his work. These charges are payable in advance at the office of the University Registrar by the purchase of a book of coupons receivable for materials in any course, or by the payment of a fixed amount for a course in which the material can not be issued to each student individually. A schedule of these fixed fees, varying from 50 cents to \$4, is posted in Marvin Hall and in the office of the University Registrar. In those courses where a large amount of material is used by the student and paid for with coupons, the total cost for any one course may reach or occasionally exceed \$10.

Those students taking summer field work will be charged the actual cost of living and incidental expenses.

Cost of Drawing Instruments.

The ability to make standard office drawings in connection with the designing of machines and structures of all kinds is a necessary part of

an engineer's attainments. The drawing practice begins in the Freshman year, and for all excepting chemical engineering students continues during the three years following. This fact makes necessary for each student the ownership of a set of drafting instruments of standard quality. In order to make this matter sure, and protect students from any who might wish to sell inferior grades, the School prescribes the kinds which may be used. During past years the lowest-priced complete set, in its case, has been one obtainable from Lawrence dealers for \$13.50. Dealers in other towns where there is little competition have usually sold equivalent sets at a price several dollars higher. Because of scarcity due to diminished importation of German-made instruments, the prices for the school year 1917-'18 will be greatly advanced, and students entering school that year should plan to expend from \$22 to \$25 for the regulation sets, together with other necessary equipment for the drawing classes.

Expense for Inspection Trips.

Students should make provision for expenses of about \$40 in the Junior or Senior year, or both, for inspection trips to engineering works. (See "Inspection Trips" at the end of "Description of Courses.")

ENGINEERING EXTENSION WORK.

CORRESPONDENCE COURSES.

Through the University Extension Division the School of Engineering offers work by correspondence. By this method it is possible for a student to secure instruction in many of the general courses required for the degree in engineering and in a few of the technical courses.

In cases where a group of six or more persons may be formed, arrangements have been made whereby the Extension Division will send an instructor at stated intervals to meet the class. By this means many of the technical courses are being offered which are not offered directly through correspondence. An additional fee is required for work thus given. In this manner it is possible for young men to do a large portion of the work required for a degree, but the School of Engineering requires that at least one year of work shall be done in residence.

Work is being offered also of a grade below that required for regular credit, in what are termed Vocational Courses. By means of these courses effort is made to extend the facilities of the University to a large group of young men who have not had time or opportunity to fit themselves for regular engineering work. When possible the work is carried on in co-operation with the school authorities of cities and towns and with industrial organizations which employ boys in considerable numbers.

For further details, see "University Extension Division."

TECHNICAL SOCIETIES.

TAU BETA PI. Kansas Alpha Chapter of the honorary engineering society of Tau Beta Pi was installed in December, 1914. Members are from the Senior and Junior classes, chosen under regulations which require that all who are elected shall have standing in the upper fourth of their class. It is governed entirely by undergraduates.

Departmental Student Societies.

In each of the six departments in which a complete course of study leading to graduation is scheduled there is a well-organized society holding regular meetings at weekly or biweekly intervals. At these meetings technical addresses are given or topics from the current press discussed. The architectural, chemical, and civil engineering societies are local in their character. The electrical, mechanical, and mining organizations are connected with the respective national engineering societies. More detailed information is given on pages 46 and 47 of the General Information Section of the Catalog.

CURRICULUM.

Leading to the Degree of Bachelor of Science in Engineering.

The work required for the degree of bachelor of science in the School of Engineering is in large measure prescribed. The following schedules show the variations among the several branches. Students are required to enroll for the work in the order given, excepting a few of the specialized courses in the Junior and Senior years, which do not depend directly on preceding courses.

The work of the Freshman year is very nearly the same for all students, so that a choice among the several branches need not be made at the start, except in the case of architectural engineering. A slight modification of the shop courses in machine construction makes it desirable for those planning to take civil and mining engineering to make definite decision at the end of the first semester.

COURSES COMMON TO ALL LINES.†

FRESHMAN YEAR.

FIRST SEMESTER, 17 hours credit.*

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Mathematics 2.....	College Algebra.....	3
Mathematics 3.....	Plane Trigonometry.....	2
German, French, or Spanish†.....	(Course as approved).....	5
English 1 E.....	Rhetoric I.....	3
Engineering Drawing 1.....	Free-hand and Mechanical Drawing.....	2
Engineering Drawing 2, or	Machine Drawing, or Foundry Practice and Pattern Making....	2
Machine Construction 1 and 2.....		
Engineering 1.....	Engineering Lectures.....	
Physical Education 1.....	Gymnasium, 3 periods per week.	

SECOND SEMESTER, 17 hours credit.

Mathematics 4 E.....	Analytic Geometry.....	5
German, French, or Spanish†.....	(Course as approved).....	5
English 2 E.....	Rhetoric II.....	2
Engineering Drawing 3.....	Descriptive Geometry.....	3
Engineering Drawing 2, or	Machine Drawing, or Foundry, Forge and Machine Shop Prac- tice as assigned.....	2
Machine Construction 1 and 2, or		
Machine Construction 3 and 5.....	Gymnasium, 3 periods per week.	

CIVIL ENGINEERING.

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Civil Engineering 1.....	Elementary Surveying.....	3
Mathematics 5 E.....	Calculus I.....	5
Physics 1 E.....	General Physics.....	5
Geology 1.....	Elementary Geology.....	5
	Technical Report I.....	½

*THE HOUR OF CREDIT.—The amount of work required to complete a course is measured in "hours." One hour in the School of Engineering represents an amount of work which is estimated to require three hours per week, throughout a semester, of the time of a student of average ability. These three hours may be divided in any ratio between class attendance and outside work, most courses being in the ratio of one hour in class to two hours of outside preparation; or two hours in class to one hour of outside preparation or report writing; or all three required in class with no outside preparation. In the descriptions of courses the number of hours credit for each is stated.

†The foreign language chosen is carried regularly throughout the year, five hours each semester. The selection of the language courses will depend on the amount and kind of language offered at entrance. Students offering more than two units at entrance may be allowed to substitute other nontechnical courses for the foreign language, provided they complete ten hours in one modern language.

‡Excepting Architectural Engineering. For that see page 203.

SECOND SEMESTER, 16½ hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Civil Engineering 4.....	Railway Surveying.....	2
Civil Engineering 2.....	Higher Surveying.....	3
Mathematics 6 E.....	Calculus II.....	3
Physics 2 E.....	General Physics.....	5
Mechanical Engineering 5.....	Engines and Boilers.....	3
	Technical Report II.....	½

SUMMER WORK.

Civil Engineering 3.....	Field Work, 4 weeks.
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JUNIOR YEAR.

FIRST SEMESTER, 18 hours credit.

Civil Engineering 55.....	Railway Surveying.....	4
Civil Engineering 51.....	Cartography.....	2
Mechanics 50.....	Mechanics.....	5
Chemistry 2.....	Advanced Inorganic Chemistry.....	4
English 59.....	Advanced Composition.....	3

SECOND SEMESTER, 17½ hours credit.

Civil Engineering 57.....	Railway Location.....	3
Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing Laboratory.....	1
Mechanics 53.....	Graphic Statics.....	2
Mechanics 55.....	Hydraulics.....	3
Mechanics 56.....	Hydraulic Laboratory.....	1
Chemistry 5 E.....	Engineering Chemistry.....	3
	Technical Report III.....	½

SENIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

Civil Engineering 61.....	Stresses in Framed Structures.....	5
Civil Engineering 64.....	Masonry.....	2
Civil Engineering 65.....	Reinforced Concrete.....	3
Civil Engineering 70.....	Sanitary Engineering I.....	3
	Optional.....	3
	Thesis.....	1
	Technical Report IV.....	½

SECOND SEMESTER, 17 hours credit.

Civil Engineering 62.....	Bridge Design.....	4
Civil Engineering 75.....	Roads and Pavements.....	2
Engineering 52.....	Industrial Administration.....	3
Mechanics 57.....	Cement Laboratory.....	1
Civil Engineering 66.....	Reinforced Concrete Design.....	1
	Optional.....	4
	Thesis.....	2

One extended inspection trip is required during the Junior or the Senior year.

Railway Engineering Option.

SENIOR YEAR.

FIRST SEMESTER, 18½ hours credit.

Civil Engineering 61.....	Stresses in Framed Structures.....	5
Civil Engineering 64.....	Masonry.....	2
Civil Engineering 65.....	Reinforced Concrete.....	3
Civil Engineering 70.....	Sanitary Engineering I.....	3
Civil Engineering 58.....	Railway Terminals and Signaling.....	2
Electrical Engineering 60.....	Elements of Electrical Engineering.....	3
	Technical Report IV.....	½

SECOND SEMESTER, 17 hours credit.

Civil Engineering 62.....	Bridge Design.....	4
Civil Engineering 75.....	Roads and Pavements.....	2
Mechanics 57.....	Cement Laboratory.....	1
Civil Engineering 59.....	Railway Construction and Maintenance.....	3
Engineering 52.....	Industrial Administration.....	3
Civil Engineering 66.....	Reinforced Concrete Design.....	1
	Thesis.....	3

Structural Engineering Option.**SENIOR YEAR.****FIRST SEMESTER, 18½ hours credit.**

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Civil Engineering 61.....	Stresses in Framed Structures.....	5
Civil Engineering 64.....	Masonry.....	2
Civil Engineering 65.....	Reinforced Concrete.....	3
Civil Engineering 70.....	Sanitary Engineering I.....	3
Mechanics 54.....	Engineering Materials.....	2
Electrical Engineering 60.....	Elements of Electrical Engineering.....	3
	Technical Report IV.....	½

SECOND SEMESTER, 17 hours credit.

Civil Engineering 62.....	Bridge Design.....	4
Civil Engineering 75.....	Roads and Pavements.....	2
Mechanics 57.....	Cement Laboratory.....	1
Civil Engineering 67.....	Higher Structures.....	3
Engineering 67.....	Industrial Administration.....	3
Civil Engineering 66.....	Reinforced Concrete Design.....	1
	Thesis.....	3

Municipal and Sanitary Option.**JUNIOR YEAR.****FIRST SEMESTER, 17 hours credit.**

Civil Engineering 73.....	Sanitary Science.....	2
Mechanics 50.....	Mechanics.....	5
Chemistry 2.....	Advanced Inorganic Chemistry.....	4
English 59.....	Advanced Composition.....	3
Electrical Engineering 60.....	Electrical Engineering.....	3

SECOND SEMESTER, 18½ hours credit.

Civil Engineering 74.....	Waste and Garbage Disposal.....	1
Civil Engineering 75.....	Roads and Pavements.....	2
Civil Engineering 52.....	City Planning.....	2
Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing Laboratory.....	1
Chemistry 3.....	Qualitative Analysis.....	4
Mechanics 55.....	Hydraulics.....	3
Mechanics 56.....	Hydraulic Laboratory.....	1
	Technical Report III.....	½

SENIOR YEAR.**FIRST SEMESTER, 17½ hours credit.**

Civil Engineering 61.....	Stresses in Framed Structures.....	4
Civil Engineering 64.....	Masonry.....	2
Civil Engineering 70.....	Sanitary Engineering I.....	3
Civil Engineering 65.....	Reinforced Concrete.....	3
Chemistry 54.....	Water Analysis.....	5
	Technical Report IV.....	½

SECOND SEMESTER, 17 hours credit.

Engineering 52.....	Industrial Administration.....	3
Civil Engineering 72.....	Sanitary Design.....	5
Civil Engineering 71.....	Sanitary Engineering II.....	4
Mechanics 57.....	Cement Laboratory.....	1
Civil Engineering 66.....	Reinforced Concrete Design.....	1
	Thesis.....	3

One extended inspection trip is required during the Junior or the Senior year.

ELECTRICAL ENGINEERING.**SOPHOMORE YEAR.****FIRST SEMESTER, 17½ hours credit.**

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Mathematics 5 E.....	Calculus I.....	5
Physics 1 E.....	General Physics.....	5
Chemistry 2.....	Advanced Inorganic Chemistry.....	4
Mechanical Engineering 1.....	Machine Drafting.....	1
Machine Construction 3.....	Forging.....	1
Machine Construction 5.....	Bench Work.....	1
	Technical Report I.....	½

SECOND SEMESTER, 18½ hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Mechanical Engineering 3.....	Elementary Machine Design.....	3
Mechanical Engineering 4.....	Steam Machinery.....	2
Mathematics 6 E.....	Calculus II.....	3
Physics 2 E.....	General Physics.....	5
Chemistry 3.....	Qualitative Analysis.....	4
Machine Construction 6.....	Machine Tool Work I.....	1
	Technical Report II.....	½

JUNIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

Electrical Engineering 50.....	Dynamo Machinery.....	3
Electrical Engineering 54.....	Electrical Laboratory.....	1½
Mechanics 50.....	Mechanics.....	5
Physics 52.....	Theory of Electricity.....	3
Physics 56 E-I.....	Electrical Measurements I.....	1½
Mechanical Engineering 52.....	Heat Engine Theory.....	3
	Technical Report III.....	½

SECOND SEMESTER, 18 hours credit.

Electrical Engineering 51.....	Theory of Alternating Currents.....	5
Electrical Engineering 55.....	Electrical Laboratory.....	1½
Mechanical Engineering 53.....	Mechanics of Heat Engines.....	2
Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing Laboratory.....	1
English 59.....	Advanced Composition.....	3
Physics 56 E-II.....	Electrical Measurements II.....	1½

SENIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

Electrical Engineering 52.....	Advanced Dynamo Machinery.....	5
Electrical Engineering 56.....	Advanced Electrical Laboratory.....	1½
Civil Engineering 50.....	Surveying.....	3
Mechanical Engineering 65.....	Power Laboratory.....	1½
Chemistry 70.....	Physical Chemistry I.....	5
	Thesis.....	1
	Technical Report IV.....	½

SECOND SEMESTER, 16½ hours credit.

Electrical Engineering 58.....	Electric Power Transmission.....	5
Electrical Engineering 57.....	Illuminating Engineering.....	2½
Engineering 52.....	Industrial Administration.....	3
Electrical Engineering 61.....	Thesis.....	3
	Optional.....	3

One extended inspection trip is required during the Junior or the Senior year.

MECHANICAL ENGINEERING.

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Mechanical Engineering 1.....	Machine Drafting.....	1
Mechanical Engineering 6.....	Steam Machinery.....	4
Mathematics 5 E.....	Calculus I.....	5
Chemistry 2.....	Advanced Inorganic Chemistry.....	4
Machine Construction 3.....	Forging.....	1
Machine Construction 5.....	Bench Work.....	1
	Technical Report I.....	½

SECOND SEMESTER, 18½ hours credit.

Mathematics 6 E.....	Calculus II.....	3
Physics 1 E.....	General Physics.....	5
Chemistry 5 E.....	Engineering Chemistry.....	3
Civil Engineering 50.....	Surveying.....	3
Machine Construction 6.....	Machine Tool Work I.....	1
Engineering 2.....	Commercial Engineering.....	3
	Technical Report II.....	½

JUNIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

Mechanical Engineering 51.....	Thermodynamics.....	3
Mechanical Engineering 2.....	Mechanism.....	3
Physics 2 E.....	General Physics.....	5
Mechanics 50.....	Mechanics.....	5
Machine Construction 7.....	Machine Tool Work II.....	1
	Technical Report.....	½

SECOND SEMESTER, 16 hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Mechanical Engineering 50	Machine Design	4
Mechanical Engineering 60	Shop Methods	1½
Mechanical Engineering 64	Mechanical Engineering Laboratory	1
Mechanics 51	Strength of Materials	4
Mechanics 52	Testing Laboratory	1
English 59	Advanced Composition	3
	Technical Report	½

SUMMER WORK.

Metallurgy 54	Iron and Steel	2
Machine Construction 8	Advanced Machine Shop Practice	1
Mechanical Engineering 68	Summer Vacation Work	

SENIOR YEAR.

FIRST SEMESTER, 18½ hours credit.

Mechanical Engineering 56	Heat Engine Design	4
Mechanical Engineering 67	Thesis	1
Mechanics 55	Hydraulics	3
Mechanics 56	Hydraulic Laboratory	1
Engineering 51	Manufacturing	2
Electrical Engineering 50	Dynamo Machinery	3
Electrical Engineering 54	Electrical Laboratory	1½
Mechanical Engineering	Option (see below)	3

SECOND SEMESTER, 16 hours credit.

Mechanical Engineering 66	Heat Engine Laboratory	1½
Mechanical Engineering 67	Thesis (continued)	2
Mechanical Engineering 64	Heating, Ventilating, and Refrigerating	2
Engineering 52	Industrial Administration	3
Electrical Engineering 53	Alternating Currents	3
Electrical Engineering 55	Electrical Laboratory	1½
Mechanical Engineering	Option (see below)	3

Power Option.

FIRST SEMESTER.

Mechanical Engineering 58	Gas Engine and Compressor Design, or	} 3
Mechanics 58	Hydraulic Power	

SECOND SEMESTER.

Mechanical Engineering 57	Steam Engine and Turbine Design, or	} 3
Electrical Engineering 62	Central Stations	

Manufactures Option.

FIRST SEMESTER.

Mechanical Engineering 58	Gas Engine and Compressor Design, or	} 3
Mechanical Engineering 61	Structural Design	

SECOND SEMESTER.

Mechanical Engineering 57	Steam Engine and Turbine Design, or	} 3
Mechanical Engineering 62	Industrial Plant Design	

MINING ENGINEERING.

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Mathematics 5 E	Calculus	5
Geology 1	Elementary Geology	5
Chemistry 2	Advanced Inorganic Chemistry	5
Civil Engineering 1	Elementary Surveying	3
	Technical Report I	½
	Mining Journal	

SECOND SEMESTER, 18½ hours credit.

Mining Engineering 1	Mining Methods	1
Physics 1 E	General Physics	5
Chemistry 3	Qualitative Analysis	4
Civil Engineering 2	Higher Surveying	3
Mineralogy 10	Elementary Mineralogy	5
	Technical Report II	½
	Mining Journal	

JUNIOR YEAR.

FIRST SEMESTER, 18½ hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Mining Engineering 50.....	Mine Surveying.....	1
Mechanical Engineering 4.....	Steam Machinery.....	2
Chemistry 51.....	Quantitative Analysis.....	5
Mechanics 50.....	Mechanics.....	5
Physics 2 E.....	Physics.....	5
	Technical Report III.....	½
	Mining Journal.....	

SECOND SEMESTER, 18 hours credit.

Mining Engineering 51.....	(a) Excavation and Explosives.....	2
	(b) Practice Work.....	2
Mining Engineering 52.....	Mining Law.....	1
Metallurgy 94.....	Iron and Steel.....	2
Metallurgy 53.....	Assaying.....	5
Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing Laboratory.....	1
English 59.....	Advanced Composition.....	3
	Mining Journal.....	

Metal Mining Option.

SENIOR YEAR.

FIRST SEMESTER, 16½ hours credit.

Mining Engineering 53.....	Ore Dressing I.....	2
Mining Engineering 54.....	Metal Mining.....	2
Mining Engineering 55.....	Mining Hydraulics.....	2
Mining Engineering 56.....	Mine Plant and Mill Design I.....	2
Geology 54.....	Economic Geology I.....	3
Mining Engineering 64.....	Mining Engineering.....	3
	Optional.....	2
	Technical Report IV.....	½
	Mining Journal.....	

SECOND SEMESTER, 18 hours credit.

Mining Engineering 57.....	Mine Administration.....	1
Mining Engineering 58.....	Ore Dressing II.....	4
Mining Engineering 59.....	Mine Examinations and Reports.....	1
Mining Engineering 60.....	Thesis.....	2
Geology 55.....	Economic Geology II.....	5
Metallurgy 91.....	Metallurgy.....	3
Engineering 52.....	Industrial Administration.....	2
	Mining Journal.....	

Coal Mining Option.

SENIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

Mining Engineering 53.....	Ore Dressing.....	2
Mining Engineering 55.....	Mining Hydraulics.....	2
Mining Engineering 56.....	Mine Plant and Mill Design I.....	2
Mining Engineering 61.....	Coal Mining I.....	2
Geology 54.....	Economic Geology I.....	3
Mining Engineering 64.....	Mining Engineering.....	3
Geology 50.....	Historical Geology I.....	3
	Technical Report IV.....	½
	Mining Journal.....	

SECOND SEMESTER, 17 hours credit.

Mining Engineering 57.....	Mine Administration.....	1
Mining Engineering 59.....	Mine Examinations and Reports.....	1
Mining Engineering 60.....	Thesis.....	2
Mining Engineering 62.....	Coal Mining II.....	3
Geology 55.....	Economic Geology II.....	5
Engineering 52.....	Industrial Administration.....	2
	Optional.....	3
	Mining Journal.....	

CHEMICAL ENGINEERING.

SOPHOMORE YEAR.

FIRST SEMESTER, 17½ hours credit.

Course number.	Subject.	Hours credit.
Chemistry 2.....	Advanced Inorganic Chemistry.....	5
Mathematics 5 E.....	Calculus I.....	5
Physics 1 E.....	General Physics.....	5
Mechanical Engineering 1.....	Machine Drafting.....	1
Machine Construction 3.....	Forging.....	1
	Technical Report I.....	½

SECOND SEMESTER, 17½ hours credit.

Chemistry 3.....	Qualitative Analysis.....	5
Physics 2 E.....	General Physics.....	5
Mineralogy 10.....	Elementary Mineralogy I.....	5
Machine Construction 5.....	Bench Work.....	2
Machine Construction 6.....	Machine Tool Work I.....	1
	Technical Report II.....	½

JUNIOR YEAR.

FIRST SEMESTER, 18½ hours credit.

Chemistry 62.....	Organic Chemistry I.....	5
Chemistry 51.....	Quantitative Analysis I.....	5
Mechanics 50.....	General Mechanics.....	5
English 59.....	Advanced Composition.....	3
	Technical Report III.....	½

SECOND SEMESTER, 18 hours credit.

Chemistry 80.....	Industrial Chemistry; Inorganic.....	3
Chemistry 52.....	Quantitative Analysis II.....	5
Chemistry 63.....	Organic Chemistry II.....	5
Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing Laboratory.....	1

SENIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

Chemistry 81.....	Industrial Chemistry; Organic.....	3
Chemistry 70.....	Physical Chemistry I.....	5
Metallurgy 90.....	Metallurgy I.....	3
Metallurgy 93.....	General Metallurgy.....	2
	{ Optional from Chemistry Department, 4 hours or Optional 2 hours and Thesis 2 hours.....	4
	Technical Report IV.....	½

SECOND SEMESTER, 17 hours credit.

Chemistry 71.....	Physical Chemistry II.....	5
Metallurgy 53.....	Assaying.....	3
Metallurgy 91.....	Metallurgy II.....	3
Engineering 52.....	Industrial Administration.....	3
	Thesis.....	3

One extended inspection trip is required during the Senior year.

ARCHITECTURAL ENGINEERING.

FRESHMAN YEAR.

FIRST SEMESTER, 17 hours credit.

Course number.	Subject.	Hours credit.
Architectural Engineering 1.....	Free-hand Drawing I.....	2
Mathematics 2.....	College Algebra.....	3
Mathematics 3.....	Plane Trigonometry.....	2
German, French, or Spanish*.....	(Course as approved).....	5
English 1 E.....	Rhetoric I.....	3
Engineering Drawing 1.....	Freehand and Mechanical Drawing.....	2
Engineering 1.....	Engineering Lectures.....	
Physical Education 1.....	Gymnasium, 3 periods per week.....	

SECOND SEMESTER, 17 hours credit.

Architectural Engineering 2.....	Free-hand Drawing II.....	2
Mathematics 4 E.....	Analytic Geometry and Theory of Equations.....	5
German, French, or Spanish.....	(Course as approved).....	5
English 2 E.....	Rhetoric II.....	2
Engineering Drawing 3.....	Descriptive Geometry.....	3
Physical Education 2.....	Gymnasium, 3 periods per week.....	

*French preferred.

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Architectural Engineering 3.....	Architectural Design I.....	3
Architectural Engineering 5.....	History of Architecture I.....	3
Architectural Engineering 7.....	Architectural Drawing I.....	1
Architectural Engineering 9.....	Shades and Shadows.....	1
Mathematics 5 E.....	Calculus I.....	5
Physics 1 E.....	General Physics.....	5
	Technical Report I.....	½

SECOND SEMESTER, 17½ hours credit.

Architectural Engineering 4.....	Architectural Design II.....	3
Architectural Engineering 6.....	History of Architecture II.....	3
Architectural Engineering 8.....	Architectural Drawing II.....	1
Physics 2 E.....	General Physics.....	5
Mathematics 6 E.....	Calculus II.....	3
Civil Engineering 50.....	Surveying.....	3
	Technical Report II.....	½

JUNIOR YEAR.

FIRST SEMESTER, 18½ hours credit.

Architectural Engineering 50.....	Architectural Design III.....	3
Architectural Engineering 56.....	History of Architecture III.....	2
Architectural Engineering 58.....	Building Construction I.....	3
Architectural Engineering 62.....	Architectural Drawing III.....	1
Chemistry 2.....	Advanced Inorganic Chemistry.....	4
Mechanics 50.....	Mechanics.....	5
	Technical Report III.....	½

SECOND SEMESTER, 17½ hours credit.

Architectural Engineering 51.....	Architectural Design IV.....	3
Architectural Engineering 59.....	Building Construction II.....	3
Architectural Engineering 61.....	Building Sanitation.....	1
Architectural Engineering 63.....	Architectural Drawing IV.....	1
Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing Laboratory.....	1
Mechanics 53.....	Graphic Statics.....	2
Mechanical Engineering 54.....	Heating and Ventilation.....	2
	Technical Report IV.....	½

SENIOR YEAR.

FIRST SEMESTER, 18 hours credit.

Architectural Engineering 52.....	Architectural Design V.....	2
Civil Engineering 61.....	Stresses in Framed Structures.....	5
Civil Engineering 65.....	Reinforced Concrete.....	3
Economics 1 E.....	Elements of Economics.....	3
English 59.....	Advanced Composition.....	3
Architectural Engineering 67.....	Office Practice and Specifications.....	2

SECOND SEMESTER, 15 hours credit.

Architectural Engineering 53.....	Architectural Design VI.....	2
Architectural Engineering 57.....	Thesis.....	3
Architectural Engineering 65.....	Steel Construction.....	3
Mechanics 57.....	Hydraulic Cement.....	1
Engineering 52.....	Industrial Administration.....	3
Electrical Engineering 64.....	Electrical Engineering for Architects.....	3

One extended inspection trip is required during the Junior or the Senior year.

ENGINEERING AND ADMINISTRATIVE SCIENCE.

SOPHOMORE YEAR.

FIRST SEMESTER.

- (a) TRANSPORTATION GROUP. Same as in Civil Engineering.
 (b) MANUFACTURING GROUP. Same as in Mechanical, Electrical, Mining, or Chemical Engineering.

SECOND SEMESTER.

- (a) TRANSPORTATION GROUP. Civil Engineering schedule, modified by introduction of Elements of Economics.
 (b) MANUFACTURING GROUP. Mechanical Engineering schedule, modified for those who have not taken Economics 1 E.

JUNIOR AND SENIOR YEARS.

- (a) **TRANSPORTATION GROUP.** To follow Civil Engineering schedule, with Economics 6 E, Economic History of the United States; 3, Elements of Accounting; and other approved courses substituted for engineering courses.
- (b) **MANUFACTURING GROUP.** To follow Mechanical Engineering schedule, with the same substitutions of courses in Economics as those indicated above.

The total of courses in Economics, History, and Sociology to be taken by students in Engineering and Administrative Science must amount to not less than 20 and not more than 26 hours.

CURRICULUM.

Leading to the Degree of Bachelor of Science.

REQUIREMENTS FOR ADMISSION.

To be admitted to these courses of study the student must have completed all of the requirements for admission and thirty hours of work in the College. His work should have been selected so that at the close of the year in the College he will have completed, in entrance work and in College work combined, the following specified hours (it is understood that one complete College entrance unit equals five hours work in the University):

20 hours in Mathematics.
 20 hours in English.
 20 hours in Foreign Language.
 5 hours in Physics or Chemistry.

If his work has not been selected to fulfill these requirements, the student will be required to make up all deficiencies.

WORK REQUIRED FOR GRADUATION.

The various courses of study outlined below are designed to give approximately the same amount of technical work as is given in the regular four-year period, but the preceding year spent in College work enables the student to obtain a wider general education and to have a little greater freedom in the selection of some of his scientific and engineering studies.

In the selection of his work in foreign language, the student is required to complete not less than five units of foreign language, of which at least two and three-fifths units must be in one modern language.

CIVIL ENGINEERING.

(BASED ON ONE YEAR OF COLLEGE WORK.)

FRESHMAN YEAR.**FIRST SEMESTER, 16 hours credit.**

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Mathematics 4 E.....	Analytic Geometry.....	5
German, French, or Spanish.....	(Course as approved).....	5
Chemistry 2.....	Advanced Inorganic Chemistry.....	4
Engineering Drawing 1.....	Free-hand and Mechanical Drawing.....	2

SECOND SEMESTER, 17 hours credit.

Mathematics 5 E.....	Calculus I.....	5
German, French, or Spanish.....	(Course as approved).....	3
Chemistry 3.....	Qualitative Analysis.....	4
Engineering Drawing 3.....	Descriptive Geometry.....	3
Engineering Drawing 2.....	Machine Drawing.....	2

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Civil Engineering 1.....	Surveying.....	3
Mathematics 6 E.....	Calculus II.....	3
Physics 1 E.....	General Physics.....	5
Geology 1.....	Elementary Geology.....	5
Machine Construction 3.....	Forging and Machine Shop Practice.....	2
Machine Construction 5.....		
	Technical Report I.....	½

SECOND SEMESTER, 18 hours credit.

Civil Engineering 1 (continued).....	Surveying.....	3
Civil Engineering 4.....	Railway Surveying.....	2
English 59.....	Advanced Composition.....	3
Physics 2 E.....	General Physics.....	5
Mechanical Engineering 5.....	Engines and Boilers.....	3
	Optional.....	2

SUMMER WORK.

Civil Engineering 3.....	Summer Field Work, 4 weeks.
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JUNIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

Civil Engineering 51.....	Cartography.....	2
Civil Engineering 55.....	Railway Surveying.....	4
Mechanics 50.....	Mechanics.....	5
Economics 1 E.....	Elements of Economics.....	3
	Optional.....	3
	Technical Report II.....	½

SECOND SEMESTER, 18½ hours credit.

Mechanics 53.....	Graphic Statics.....	3
Civil Engineering 57.....	Railway Location.....	3
Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing Laboratory.....	1
Mechanics 56.....	Hydraulic Laboratory.....	1
Mechanics 55.....	Hydraulics.....	3
	Optional.....	3
	Technical Report III.....	½

SUMMER WORK.

Civil Engineering 51.....	Summer Field Work, 4 weeks.
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SENIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

Civil Engineering 64.....	Masonry.....	2
Civil Engineering 65.....	Reinforced Concrete.....	3
Civil Engineering 61.....	Stresses in Framed Structures.....	5
Civil Engineering 70.....	Sanitary Engineering I.....	3
Electrical Engineering 60.....	Elements of Electrical Engineering.....	3
	Thesis.....	1
	Technical Report IV.....	½

SECOND SEMESTER, 16 hours credit.

Civil Engineering 62.....	Bridge Design.....	4
Engineering 52.....	Industrial Administration.....	3
Mechanics 57.....	Hydraulic Cement.....	1
Civil Engineering 75.....	Roads and Pavements.....	2
Civil Engineering 66.....	Reinforced Concrete Design.....	1
	Optional.....	3
	Thesis.....	2

One extended inspection trip is required during the Junior or the Senior year.

For Railway and Structural Engineering options, see page 189 and 190.

Municipal and Sanitary Option.

JUNIOR YEAR.

FIRST SEMESTER, 18½ hours credit.

Mechanics 50.....	Mechanics.....	5
Civil Engineering 73.....	Sanitary Science.....	2
Electrical Engineering 60.....	Elements of Electrical Engineering.....	3
Chemistry 54.....	Water Analysis.....	5
Economics 1 E.....	Elements of Economics.....	3
	Technical Report II.....	½

SECOND SEMESTER, 17½ hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Civil Engineering 75.....	Roads and Pavements.....	2
Civil Engineering 52.....	City Planning.....	2
Mechanics 55.....	Hydraulics.....	3
Mechanics 56.....	Hydraulic Laboratory.....	1
Civil Engineering 74.....	Waste and Garbage Disposal.....	1
Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing Laboratory.....	1
	Optional.....	3
	Technical Report III.....	½

SENIOR YEAR.

FIRST SEMESTER, 17¼ hours credit.

Civil Engineering 64.....	Masonry.....	2
Civil Engineering 65.....	Reinforced Concrete.....	3
Civil Engineering 61.....	Stresses in Framed Structures.....	4
Civil Engineering 70.....	Sanitary Engineering I.....	3
	Thesis.....	1
	Optional.....	4
	Technical Report IV.....	½

SECOND SEMESTER, 16 hours credit.

Engineering 52.....	Industrial Administration.....	8
Civil Engineering 72.....	Sanitary Design.....	5
Civil Engineering 71.....	Sanitary Engineering II.....	4
Mechanics 57.....	Cement Laboratory.....	1
Civil Engineering 66.....	Reinforced Concrete Design.....	1
	Thesis.....	2

One extended inspection trip is required during the Junior or the Senior year.

ELECTRICAL ENGINEERING.

(BASED ON ONE YEAR OF COLLEGE WORK.)

FRESHMAN YEAR.

FIRST SEMESTER, 18 hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Mathematics 4 E.....	Analytic Geometry.....	5
Chemistry 2.....	Advanced Inorganic Chemistry.....	4
German, French, or Spanish.....	(Course as approved).....	5
Engineering Drawing 1.....	Free-hand and Mechanical Drawing.....	2
Machine Construction 1 and	} Foundry Practice.....	} 2
Machine Construction 2.....		
	Pattern Making.....	

SECOND SEMESTER, 17 hours credit.

Mathematics 5 E.....	Calculus I.....	5
Chemistry 3.....	Qualitative Analysis.....	4
German, French, or Spanish.....	(Course as approved).....	3
Engineering Drawing 3.....	Descriptive Geometry.....	3
Engineering Drawing 2.....	Machine Drawing.....	2

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ hours credit.

Physics 1 E.....	General Physics.....	5
Mathematics 6 E.....	Calculus II.....	3
Chemistry 70.....	Physical Chemistry I.....	5
Economics 1 E.....	Elements of Economics.....	3
Mechanical Engineering 1.....	Machine Drafting.....	1
Machine Construction 3.....	Forging.....	1
	Technical Report I.....	½

SECOND SEMESTER, 17½ hours credit.

Mathematics.....	(Course to be elected).....	3
Physics 2 E.....	General Physics.....	5
Mechanical Engineering 3.....	Elementary Machine Design.....	3
Mechanical Engineering 4.....	Steam Machinery.....	2
Civil Engineering 50.....	Surveying.....	3
Machine Construction 5.....	Bench Work.....	1
	Technical Report II.....	½

JUNIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

Electrical Engineering 50.....	Dynamo Machinery.....	3
Electrical Engineering 54.....	Electrical Laboratory.....	1½
Mechanics 50.....	Mechanics.....	5
Physics 52.....	Theory of Electricity.....	3
Physics 56 E-I.....	Electrical Measurements I.....	1½
Mechanical Engineering 52.....	Heat Engine Theory.....	3
	Technical Report III.....	½

SECOND SEMESTER, 18 hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Electrical Engineering 51.....	Theory of Alternating Currents.....	5
Electrical Engineering 55.....	Electrical Laboratory.....	1½
Mechanical Engineering 53.....	Mechanics of the Steam Engine.....	2
Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing Laboratory.....	1
English 59.....	Advanced Composition.....	3
Physics 56 E-II.....	Electrical Measurements II.....	1½

SENIOR YEAR.

FIRST SEMESTER, 16 hours credit.

Electrical Engineering 52.....	Advanced Dynamo Machinery.....	5
Electrical Engineering 56.....	Advanced Electrical Laboratory.....	1½
Mechanical Engineering 65.....	Power Laboratory.....	2
	Thesis.....	1
	Optional.....	6
	Technical Report IV.....	½

SECOND SEMESTER, 17 hours credit.

Electrical Engineering 57.....	Illuminating Engineering.....	3
Electrical Engineering 58.....	Electric Power Transmission.....	5
Engineering 52.....	Industrial Administration.....	3
	Optional.....	3
	Thesis.....	3

One extended inspection trip is required during the Junior or the Senior year.

MECHANICAL ENGINEERING.

(BASED ON ONE YEAR OF COLLEGE WORK.)

FRESHMAN YEAR.

FIRST SEMESTER, 17 hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Mathematics 4 E.....	Analytic Geometry.....	5
Chemistry 2.....	Advanced Inorganic Chemistry.....	5
German, French, or Spanish.....	(Course as approved).....	5
Engineering Drawing 1.....	Free-hand and Mechanical Drawing.....	2

SECOND SEMESTER, 17 hours credit.

Mathematics 5 E.....	Calculus I.....	5
Chemistry 3 or 5 E.....	(Optional).....	5 or 3
	(College Optional).....	3 or 5
Engineering Drawing 2.....	Machine Drawing.....	2
Machine Construction 1 and	{ Foundry Practice.....	2
Machine Construction 2.....		
	Pattern Making.....	

SOPHOMORE YEAR.

FIRST SEMESTER, 17½ hours credit.

Mathematics 6 E.....	Calculus II.....	3
Physics 1 E.....	General Physics.....	5
Engineering Drawing 3.....	Descriptive Geometry.....	3
Machine Construction 3 and	{ Forging.....	3
Machine Construction 5 and		
Machine Construction 6.....	Bench Work.....	
Mechanical Engineering 2.....	Machine Tool Work I.....	3
	Mechanism.....	3
	Technical Report I.....	½

SECOND SEMESTER, 17½ hours credit.

Physics 2 E.....	General Physics.....	5
Mechanical Engineering 6.....	Steam Engineering.....	4
Mechanics 50.....	Mechanics.....	5
	Optional.....	3
	Technical Report II.....	½

JUNIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing Laboratory.....	1
Mechanical Engineering 51.....	Thermodynamics.....	4
Mechanical Engineering 64.....	Mechanical Laboratory.....	1
Metallurgy 61 E.....	Metallurgy I.....	3
Engineering 2.....	Commercial Engineering.....	3
Machine Construction 7.....	Machine Tool Work II.....	1
	Technical Report III.....	½

SECOND SEMESTER, 17 hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Mechanical Engineering 50	Machine Design	4
Mechanical Engineering 54	Heating, Ventilating, and Cooling	2
Mechanical Engineering 60	Shop Methods	2
English 59	Advanced Composition	3
Mechanical Engineering 66	Heat Engine Laboratory	2
Machine Construction 8	Machine Shop Practice	1
	Optional	3

SUMMER WORK.

Mechanical Engineering 68..... Summer Vacation Work.

SENIOR YEAR.

FIRST SEMESTER, 18½ hours credit.

Mechanical Engineering 56	Steam Engine and Turbine Design	4
Mechanical Engineering 67	Thesis	1
Mechanics 55	Hydraulics	3
Mechanics 56	Hydraulic Laboratory	1
Engineering 51	Manufacturing	2
Electrical Engineering 50	Dynamo Machinery	3
Electrical Engineering 54	Electrical Laboratory	1½
Mechanical Engineering Option (see below)		3
	Technical Report	½

SECOND SEMESTER, 17½ hours credit.

Mechanical Engineering 67	Thesis	2
Civil Engineering 50	Surveying	3
Engineering 52	Industrial Administration	3
Electrical Engineering 53	Alternating Currents	3
Electrical Engineering 55	Electrical Laboratory	1½
Mechanical Engineering Option (see below)		5

Power Option.

FIRST SEMESTER.

Mechanical Engineering 58	Gas Engine and Compressor Design, or	} 3
Mechanics 58	Hydraulic Power	

SECOND SEMESTER.

Mechanical Engineering 57	Steam Engine and Turbine Design, or	} 5
Electrical Engineering 62	Central Stations, and	
	Other Engineering Option	

Manufactures Option.

FIRST SEMESTER.

Mechanical Engineering 58	Gas Engine and Compressor Design	3
Mechanical Engineering 61	Structural Design	3

SECOND SEMESTER.

Mechanical Engineering 57	Steam Engine and Turbine Design, or	} 5
Mechanical Engineering 62	Industrial Plant Design, and	
	Other Engineering Option	

One extended inspection trip is required during the Junior or the Senior year.

MINING ENGINEERING.

(BASED ON ONE YEAR OF COLLEGE WORK.)

FRESHMAN YEAR.

FIRST SEMESTER, 17 hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Chemistry 2	Advanced Inorganic Chemistry	5
Mathematics 4 E	Analytical Geometry and Theory of Equations	5
Engineering Drawing 1	Free-hand and Mechanical Drawing	2
Machine Construction 3	Forging	1
Machine Construction 5	Bench Work	1
Engineering 1	Engineering Lectures	
	Optional	3

SECOND SEMESTER, 17 hours credit.

Mining Engineering 1	Mining Methods	1
Mathematics 5 E	Calculus I	5
Chemistry 3	Qualitative Analysis	5
Engineering Drawing 3	Descriptive Geometry	3
Engineering Drawing 2	Machine Drafting	2
Machine Construction 6	Machine Tool Work I	1

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Geology 1.....	Elementary Geology.....	5
Civil Engineering 1.....	Elementary Surveying.....	5
Physics 1 E.....	General Physics.....	5
Mechanical Engineering 4.....	Steam Machinery.....	2
Mechanical Engineering 1.....	Machine Drafting.....	1
	Optional.....	2
	Technical Report.....	½
	Mining Journal.....	

SECOND SEMESTER, 18 hours credit.

Mining Engineering 51.....	(a) Excavation and Explosives.....	2
	(b) Practice Work.....	
Mineralogy 10.....	Elementary Mineralogy.....	5
Civil Engineering 2.....	Higher Surveying.....	3
Physics 2 E.....	General Physics.....	5
English 59.....	Advanced Composition.....	3

JUNIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

Mining Engineering 50.....	Mine Surveying.....	1
Geology 50.....	Historical Geology.....	3
Chemistry 51.....	Quantitative Analysis.....	5
Mechanics 50.....	Mechanics.....	5
Geology 54.....	Economic Geology I.....	3
	Technical Report II.....	½
	Mining Journal.....	

SECOND SEMESTER, 18½ hours credit.

Mining Engineering 52.....	Mining Law.....	1
Metallurgy 94.....	Iron and Steel.....	2
Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing Laboratory.....	1
Metallurgy 53.....	Assaying.....	5
Geology 54.....	Economic Geology II.....	5
	Technical Report III.....	½
	Mining Journal.....	

Metal Option.

SENIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

Mining Engineering 53.....	Ore Dressing I.....	2
Mining Engineering 54.....	Metal Mining.....	2
Mining Engineering 56.....	Mine Plant and Mill Design I.....	2
Mining Engineering 55.....	Mining Hydraulics.....	2
Mining Engineering 67.....	Mineral and Public Land Surveying.....	2
Mining Engineering 64.....	Mining Engineering.....	3
	Technical Report IV.....	½
	Optional.....	4
	Mining Journal.....	

SECOND SEMESTER, 16, 17, or 18 hours credit.

Mining Engineering 57.....	Mine Administration.....	1
Mining Engineering 58.....	Ore Dressing II.....	4
Mining Engineering 59.....	Mine Examination and Reports.....	1
Mining Engineering 63, or	Mine Plant and Mill Designing II.....	3
Mining Engineering 67, or	Advanced Ore Dressing III.....	4
Mineralogy 61.....	Petrography.....	5
Metallurgy 91.....	Metallurgy II.....	3
Engineering 52.....	Industrial Administration.....	2
Mining Engineering 60.....	Thesis.....	2

Coal Mining Option.

SENIOR YEAR.

FIRST SEMESTER, 16 hours credit.

Mining Engineering 53.....	Ore Dressing.....	2
Mining Engineering 61.....	Coal Mining I.....	2
Mining Engineering 56.....	Mine Plant and Mill Design I.....	2
Mining Engineering 55.....	Mining Hydraulics.....	2
Mining Engineering 67.....	Mineral and Public Land Surveying.....	3
Mining Engineering 64.....	Mining Engineering.....	3
	Optional.....	2
	Mining Journal.....	

SECOND SEMESTER, 17 hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Mining Engineering 57.....	Mine Administration.....	1
Mining Engineering 62.....	Coal Mining II.....	3
Mining Engineering 59.....	Mine Examination and Reports.....	1
Mining Engineering 63, or	Mine Plant and Mill Design II.....	3
Mining Engineering 52.....	Industrial Administration.....	2
Mining Engineering 60.....	Thesis.....	2
	Optional.....	5

CHEMICAL ENGINEERING.

(BASED ON ONE YEAR OF COLLEGE WORK.)

NOTE.—Students planning to take the four-year advanced course of study in chemical engineering are very strongly advised to elect chemistry 1 as part of their College work, in addition to the work already recommended in the statement preceding these advanced courses.

FRESHMAN YEAR.

FIRST SEMESTER, 17 hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Chemistry 2.....	Advanced Inorganic Chemistry.....	5
Mathematics 4 E.....	Analytic Geometry and Theory of Equations.....	5
Engineering Drawing 1.....	Free-hand and Mechanical Drawing.....	2
	Optional.....	5

SECOND SEMESTER, 17 hours credit.

Chemistry 3.....	Qualitative Analysis.....	5
Mathematics 5 E.....	Calculus I.....	5
Engineering Drawing 3.....	Descriptive Geometry.....	2
Engineering Drawing 2.....	Machine Drawing.....	3
Machine Construction 1.....	Foundry Practice.....	2
Machine Construction 2.....	Pattern Making.....	

SOPHOMORE YEAR.

FIRST SEMESTER, 17½ hours credit.

Chemistry 51.....	Quantitative Analysis I.....	5
Physics 1 E.....	General Physics.....	5
Mechanics 50.....	Mechanics.....	5
Machine Construction 3 (modified).....	Forging.....	1
Mechanical Engineering 1.....	Machine Drafting.....	1
	Technical Report I.....	½

SECOND SEMESTER, 18½ hours credit.

Chemistry 52.....	Quantitative Analysis II.....	5
Physics 2 E.....	General Physics.....	5
Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing Laboratory.....	1
Mechanical Engineering 3, or	Machine Design.....	3
Mechanical Engineering 5.....	Engines and Boilers.....	
	Technical Report II.....	½

JUNIOR YEAR.

FIRST SEMESTER, 18½ hours credit.

Chemistry 62.....	Organic Chemistry I.....	5
Metallurgy 90.....	Metallurgy I.....	3
Geology 1.....	Elementary Geology.....	5
English 59.....	Advanced Composition.....	3
Metallurgy 93.....	General Metallurgy.....	2
	Technical Report III.....	½

SECOND SEMESTER, 18½ hours credit.

Chemistry 63.....	Organic Chemistry II.....	5
Chemistry 80.....	Inorganic Industrial Chemistry.....	3
Metallurgy 91.....	Metallurgy II.....	3
Mineralogy 10.....	Elementary Mineralogy I.....	5
	Optional.....	2
	Technical Report IV.....	½

SENIOR YEAR.

FIRST SEMESTER, 17 hours credit.

Chemistry 81.....	Industrial Organic Chemistry.....	3
Chemistry 70.....	Physical Chemistry I.....	5
Chemistry.....	(Optional).....	4
Economics 1 E.....	Elements of Economics.....	3
	Thesis.....	2

SECOND SEMESTER, 16 hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Chemistry 71.....	Physical Chemistry II.....	5
Metallurgy 53.....	Assaying.....	3
Engineering 52.....	Industrial Administration.....	3
	Optional.....	2
	Thesis.....	3

One extended inspection trip is required during the Senior year.

ARCHITECTURAL ENGINEERING.

(BASED ON ONE YEAR OF COLLEGE WORK.)

FRESHMAN YEAR.

FIRST SEMESTER, 18 hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Architectural Engineering 1.....	Free-hand Drawing I.....	2
Mathematics 4 E.....	Analytic Geometry and Theory of Equations.....	5
German, French, or Spanish *	(Course as approved).....	5
Chemistry 2.....	Advanced Inorganic Chemistry.....	4
Engineering Drawing 1.....	Free-hand and Mechanical Drawing.....	2

SECOND SEMESTER, 17 hours credit.

Architectural Engineering 2.....	Free-hand Drawing II.....	2
Mathematics 5 E.....	Calculus I.....	5
German, French, or Spanish.....	Course as approved, or Optional.....	3
Chemistry 3.....	Qualitative Analysis, or Optional.....	4
Engineering Drawing 3.....	Descriptive Geometry.....	3

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ hours credit.

Architectural Engineering 3.....	Architectural Design I.....	3
Architectural Engineering 5.....	History of Architecture I.....	3
Architectural Engineering 7.....	Architectural Drawing I.....	1
Architectural Engineering 9.....	Shades and Shadows.....	1
Physics 1 E.....	General Physics.....	5
Mathematics 5 E.....	Calculus II.....	3
Machine Construction 1, and	} Forging and Bench Work.....	2
Machine Construction 2.....		
	Technical Report I.....	½

SECOND SEMESTER, 18½ hours credit.

Architectural Engineering 4.....	Architectural Design II.....	3
Architectural Engineering 6.....	History of Architecture II.....	3
Architectural Engineering 8.....	Architectural Drawing II.....	1
Physics 2 E.....	General Physics.....	5
Civil Engineering 52.....	Surveying.....	3
	Optional.....	3
	Technical Report II.....	½

JUNIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

Architectural Engineering 50.....	Architectural Design III.....	3
Architectural Engineering 56.....	History of Architecture III.....	3
Architectural Engineering 58.....	Building Construction I.....	2
Architectural Engineering 62.....	Architectural Drawing III.....	1
Mechanics 50.....	Mechanics.....	5
	Optional.....	3
	Technical Report III.....	½

SECOND SEMESTER, 17½ hours credit.

Architectural Engineering 51.....	Architectural Design IV.....	3
Architectural Engineering 59.....	Building Construction II.....	3
Architectural Engineering 61.....	Building Sanitation.....	1
Architectural Engineering 63.....	Architectural Drawing IV.....	1
Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing Laboratory.....	1
Mechanics 53.....	Graphic Statics.....	2
Mechanical Engineering 54.....	Heating and Ventilation.....	2
	Technical Report IV.....	½

*French preferred.

SENIOR YEAR.

FIRST SEMESTER, 18 hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Architectural Engineering 52.....	Architectural Design V.....	2
Civil Engineering 61.....	Stresses in Framed Structures.....	5
Civil Engineering 65.....	Reinforced Concrete.....	3
Economics 1 E.....	Elements of Economics.....	3
English 59.....	Advanced Composition.....	3
Architectural Engineering 67.....	Office Practice and Specifications.....	2

SECOND SEMESTER, 15 hours credit.

Architectural Engineering 53.....	Architectural Design VI.....	2
Architectural Engineering 57.....	Thesis.....	3
Architectural Engineering 65.....	Steel Construction.....	3
Mechanics 57.....	Hydraulic Cement.....	1
Engineering 52.....	Industrial Administration.....	3
Electrical Engineering 64.....	Electrical Engineering for Architects.....	3

EQUIPMENT.

The School of Engineering is a part of the University; hence the entire equipment of the University is also equipment of the School of Engineering in all things in which engineering students are concerned. The work of the Engineering School which is common to several schools of the University, such as mathematics, physics, chemistry, languages, etc., is carried on to some extent in buildings and by departments of instruction not exclusively for engineering students; while such work of the School as is technical and exclusively engineering in character is carried on by departments of instruction primarily for engineering students and largely in buildings erected for the special work of the School. Below is described that part of the general equipment of the University which pertains chiefly to the work of this School. For other equipment, see "The College" and descriptions of other schools of the University.

BUILDINGS.

The buildings erected exclusively for engineering work are Marvin Hall, the mechanical laboratory in connection with the power plant, and the Fowler Shops. The work in mining is provided for in Haworth Hall. For description of these buildings, see the General Information section.

LIBRARIES.

The general University library is available for use of engineering students. The engineering library contains books, periodicals, pamphlets, maps, and manuscripts for use in the study of civil, mechanical, electrical, and architectural engineering. The departmental libraries in chemistry, geology, physics and astronomy, and mathematics are open to engineering students. Large plates and other illustrative material for the use of architecture students are in the reading room of the architectural engineering department.

DRAWING ROOMS.

Drawing rooms in Marvin Hall, furnished with individual tables containing drawers for each student's outfit, cabinets for drawing boards, etc., are provided for the work in general mechanical drawing, machine design, bridge and structural design, and architecture. Drawing rooms in Haworth Hall are similarly provided for the work in mining engineering.

On the walls and in print cases are photographs and drawings of actual construction and blue prints of working drawings for bridges, railroad structures, sewers, waterworks, mine plants, buildings, etc.

LABORATORIES.

Care has been taken to provide laboratory equipment of maximum effectiveness in the teaching of undergraduates. In certain of the laboratories, moreover, the means are at hand for carrying on more advanced research work.

For the work in pure science the laboratories of the College departments of physics, chemistry, and bacteriology are available. In this way engineering students are afforded all necessary opportunities for gaining familiarity with the most approved methods of carrying on work in the respective branches. Chemical-engineering students continue for a much longer time in the use of the apparatus provided in the depart-

ment of chemistry than do the other students. Similarly, electrical-engineering students continue in the use of the finer types of electrical measuring instruments, which are provided in the well-equipped laboratories of the physics department. Mining-engineering students, and those following the civil-engineering option in sanitary and municipal work, draw largely also upon the pure-science laboratories, the former mainly in the lines of metallurgy and chemistry, the latter in the chemical and bacteriological examination of water and sewage.

In applied science the laboratories of the School of Engineering next come into use. Particular attention is paid to the work which is given to large numbers of engineering students irrespective of department groups. Among these are: the laboratory for the investigation of the strength of materials, which is provided with a special machine on which loads may be carried to a maximum of 200,000 pounds, and in which several smaller-capacity machines are employed for all student work; the laboratory for experimental work in hydraulics, which is equipped for the usual work in the measurement of flow of water over weirs, through pipes, and for measuring performance of pumps, water motors, etc.; the complete outfit of surveying instruments, by means of which the department of civil engineering carries on its work in connection with the teaching of surveying in all of its various refinements; the laboratory for the study of electrical machines of all kinds, and which is especially well equipped with respect to standardizing apparatus for the most accurate forms of electrical measuring instruments employed in engineering practice; the laboratory devoted to the study of electric-lighting problems, equipped with modern photometer and other apparatus adequate for the work; the laboratory for the study of steam and gas-engine power development, equipped with many representative types of engines, boilers, and other lines of equipment necessary for an actual study of operating conditions; and the machine-construction laboratory which is equipped with machines for the carrying on of all of the ordinary processes in shop work, but which is so employed that students may be considered to be studying methods employed in the production of machines rather than engaged in acquiring manipulative skill.

A third form of laboratory equipment is that applied to special problems in connection with the various lines of specialized work. Each of the departments is equipped in this way, all in very satisfactory measure with respect to undergraduate student work. The civil-engineering department is equipped to give special work for those engaged in the advanced branches of railway surveying, and for the investigation of road-making materials. It owns a complete outfit for its work carried on during the summer surveying-camp period. The department of mechanics is equipped to carry on special investigations in reinforced concrete, and with various other forms of material employed in engineering structures. The electrical-engineering department is provided with necessary equipment for carrying on research work with alternating-current machinery, in telephony, and with electrical measuring instruments. The mechanical-engineering department, in connection with the University power plant, is able to carry on many lines of investigation in steam-power generation, with gas engines, with refrigerating apparatus, and in the study of fuels and lubricating oils. With the proper equipment, and in coöperation with the department of metallurgy, students are enabled to make special studies of tool steels, and the effects of heat upon metals of various kinds. The mining engineering laboratories are equipped for large-scale tests on various ores, for washing coal in ten-ton lots, for the study of fuels and of coal-mine explosions. Students are given mine-surveying practice in the State Mine at Lansing and in the tunnels of the University heating system, and practice in tunneling and the use of explosives in the experimental mine on the campus.

In the lines of applied chemistry the equipment is of high grade and well adapted to the carrying on of work characteristic of the chemical industries as well as for the study of special metals and the analytical work on ores and the many other forms of material with which the industrial chemist must deal. In the rooms of the architectural-engineering department are deposited the many illustrative drawings, plates, and lantern slides which are of service in the study of architectural forms and in creative designing work, which fills so important a position in the training of the architect.

DESCRIPTION OF COURSES.

ARCHITECTURAL ENGINEERING.

Professors: GOLDSMITH, GRIFFITH, RICE (H. A.).
Assistant Instructor: BAILEY (LeF.).

- 1.—FREE-HAND DRAWING I. Two hours credit. First semester, M. W. F., 8:30 to 10:30. Charcoal and pencil drawing from the cast. Griffith.
- 2.—FREE-HAND DRAWING II. Two hours credit. Second semester, six hours. Theory of perspective, free-hand perspective, shades and shadows. Griffith.
- 3.—ARCHITECTURAL DESIGN I. Three hours credit. First semester, nine hours. A study of the elementary architectural forms and fundamental construction features, their employment in architectural composition, the classic orders. Drafting-room work and informal lectures. Bailey.
- 4.—ARCHITECTURAL DESIGN II. Three hours credit. Second semester, nine hours. Continuation of course 3, the application of the orders in elementary design. A study and analysis of architectural composition based on the orders, designed to train the student in the æsthetics of architecture and the fundamentals of design. Drafting-room work and informal lectures. Bailey.
- 5.—HISTORY OF ARCHITECTURE I. Three hours credit. First semester, three hours, M. W. F., at 8:30. An analytical study of architectural development of the historic styles, explaining the underlying principles of construction and design, influence of materials, and effects of religious and political conditions. The first semester will include the architecture of Egypt, Assyria, Persia, Greece, and Rome. Illustrated lectures, reading, and sketching. Goldsmith.
- 6.—HISTORY OF ARCHITECTURE II. Three hours credit. Second semester, three hours, M. W. F., at 10:30. Continuation of course 5, from the close of Roman supremacy through the periods of Byzantine, Romanesque and Gothic development, and the Renaissance. Illustrated lectures, reading, sketching, and research. Goldsmith.
- 7.—ARCHITECTURAL DRAWING I. One hour credit. First semester, three hours. Pencil drawing from casts of architectural ornament and historic details, designed to prepare the student for the free use of sketching in architectural composition and design. Bailey.
- 8.—ARCHITECTURAL DRAWING II. One hour credit. Second semester, three hours. Continuation of course 7. Pen, pencil, and brush work. Bailey.
- 9.—SHADES AND SHADOWS. One hour credit. First semester, three hours. Application of the principles of descriptive geometry in casting conventional shadows. Conventional rendering of architectural subjects. Goldsmith.

50.—ARCHITECTURAL DESIGN III. Three hours credit. First semester, nine hours. Continuation of course 4. Problems in theoretical design, alternating with problems in constructive design, working drawings and details, applying the knowledge gained in course 58. Bailey.

51.—ARCHITECTURAL DESIGN IV. Three hours credit. Second semester, nine hours. Continuation of course 50. Problems in design of increased importance, alternating with problems in constructive design based on course 59. Bailey.

52.—ARCHITECTURAL DESIGN V. Two hours credit. First semester, six hours. A course of engineering design combining problems in engineering with architectural composition and applying the technical knowledge gained in the engineering courses. Goldsmith.

53.—ARCHITECTURAL DESIGN VI. Two hours credit. Second semester, six hours. Continuation of course 52. Goldsmith.

56.—HISTORY OF ARCHITECTURE III. Two hours credit. First semester, two hours. Continuation of course 6, including the classic and Gothic revivals and modern architecture in Europe and the United States. Illustrated lectures, reading, sketching, and research. Goldsmith.

57.—THESIS. Two hours credit. Second semester, six hours. An extended problem in architectural-engineering design requiring complete plans, elevations, section and construction details, with outline specifications of building materials and methods. The subject may be chosen by the student with the approval of the professor of architecture. Goldsmith.

58.—BUILDING CONSTRUCTION I. Three hours credit. First semester, three hours, M. W. F., at 9:30. A study of the principles of wooden construction and their application in structural design, working drawings, and details. This course considers building and finishing woods, framing of wooden buildings, details of exterior finish, interior woodwork, and cabinet work. Lectures, reading, and drafting-room work. Goldsmith.

59.—BUILDING CONSTRUCTION II. Three hours credit. Second semester, three hours, M. W. F., at 9:30. A study of the principles of masonry construction and their application. This course considers building stones, brickwork, terra cotta, simple cast-iron and steel work, fireproofing, and plastering. Lectures, reading, and drafting-room work. Goldsmith.

61.—BUILDING SANITATION. One hour credit. Second semester. Plumbing, sewerage, water-supply, and plumbing fixtures. Lectures, reading, and drafting-room work. Goldsmith.

62.—ARCHITECTURAL DRAWING III. One hour credit. First semester, three hours. Continuation of course 8. Goldsmith.

63.—ARCHITECTURAL DRAWING IV. One hour credit. Second semester, three hours. Continuation of course 62. Goldsmith.

65.—STEEL CONSTRUCTION. Three hours credit. Second semester. A course in steel framing of buildings. Drafting-room work. H. A. Rice.

67.—OFFICE PRACTICE AND SPECIFICATIONS. A course dealing with the essentials of office practice and of specification writing. Two hours, two credits, first semester. Goldsmith.

BACTERIOLOGY.

Assistant Professor: YOUNG (C. C.).

53E.—SANITARY WATER ANALYSIS. Five hours credit. First semester, daily, 8:30 to 10:30. (See chemistry 54.) Part of the semester will be devoted to bacteriological technic and reading along general lines, followed by special work on the bacteriology of water and sewage. The remainder of the semester will be spent in chemical quantitative analysis

of water and sewage and interpretation of results of sanitary tests. Designed for students in sanitary engineering, but open to others who have had chemistry 3, if the instructor's consent has been secured in advance.

C. C. Young.

For other courses in Bacteriology see The College.

CHEMISTRY.

Professors: BAILEY, CADY, DAINS, WHITAKER.

Associate Professor: ALLEN.

Assistant Professors: YOUNG (C. C.), FARAGHER,

LONG, BRUCKMILLER.

Instructors: WHELAN, PARKHURST, ESTES, MAAG,

SEIBEL, LATIMER.

FEEs will be charged in the various courses to cover cost of materials, breakage, etc.

2.—INORGANIC CHEMISTRY. Four or five hours credit. First semester. Lectures and recitations, M. W. F., 8:30 or 9:30. Laboratory, Tu. Th., 8:30 to 10:30 or 1:30 to 3:30. Chemical- and mining-engineering students take four hours laboratory, others two hours.

Cady, Faragher, and assistants.

3.—INORGANIC CHEMISTRY AND QUALITATIVE ANALYSIS. Four or five hours credit. Second semester. Lectures and recitations, Tu. Th., 8:30 or 9:30. Laboratory, M. W. F., 8:30 to 10:30 or 1:30 to 3:30. Chemical-engineering students take six hours laboratory, others four hours. Prerequisite, course 2.

Cady, Faragher, and assistants.

5.—ENGINEERING CHEMISTRY. Three hours credit. Second semester. Recitations, Tu. Th., at 9:30; laboratory, F., 1:30 to 4:30. Required of mechanical- and civil-engineering students.

Cady and assistants.

51.—QUANTITATIVE ANALYSIS I. Two, three, or five hours credit. Both semesters, 10:30 to 12:30 or 1:30 to 3:30. A general course covering the fundamental principles of gravimetric and volumetric analysis. Five-hour course required of chemical- and mining-engineering students. Prerequisite, course 3.

Allen and assistants.

52.—QUANTITATIVE ANALYSIS II. Two, three, or five hours credit. Both semesters, 1:30 to 3:30, or by appointment. In the latter part of the course the volumetric analysis of ores and metallurgical products will be taken up. In connection with this work some specialty, such as cement, glass, or packing-house industry, rock analysis, paint analysis, etc., may be pursued. Five-hour course required of chemical-engineering students. Prerequisite, course 51.

Allen and assistants.

52A.—SANITARY WATER ANALYSIS. Three hours credit. Second semester, 10:30 to 12:30. Laboratory work in the sanitary analysis of water and sewage. Lectures and assigned readings on the interpretation of results and upon the methods used. Especially designed to fit students for commercial positions in this line of work. Prerequisite, course 51.

Bruckmiller.

52B.—BOILER-WATER ANALYSIS. Two hours credit. Second semester, 10:30 to 12:30. Laboratory work in the analysis and softening of boiler waters. Lectures and assigned readings on softening problems and commercial practice in water treatment. Especially designed to fit students for commercial positions in this line of work. Prerequisite, course 51.

Bruckmiller.

52C.—GAS ANALYSIS. Two hours credit. First semester, by appointment. A laboratory course of general gasometric methods, analysis of flue gases, artificial and natural gases. Prerequisite, course 51.

Allen.

52D.—FOOD ANALYSIS. Three hours credit. Both semesters, by appointment. Lectures and laboratory. Prerequisites, courses 51 and 61 or 62. Long.

52E.—OIL ANALYSIS. Two hours credit. First semester, by appointment. The examination of petroleum and products, lubricating oils, asphalts, and road materials. Prerequisite, course 51. Allen.

52F.—IRON AND STEEL ANALYSIS. Two hours credit. Second semester, by appointment. Analysis of special steels and alloys. Prerequisite, course 51. Allen.

52G.—THE CHEMISTRY OF MILLING AND BAKING. Two hours credit. Second semester, by appointment. Designed to meet the requirements of chemists desiring to carry on control work in the milling industry. Prerequisites, courses 51 and 61 or 62. Estes.

52H.—INDUSTRIAL ORGANIC ANALYSIS. Two hours credit. Second semester, by appointment. Includes analyses of soap, paper, leather, starches, etc. Prerequisites, courses 51 and 61 or 62. Estes.

52I.—WET ASSAYING. Two hours credit. Second semester, by appointment. Volumetric methods for the estimation of copper, lead, zinc, manganese, iron, silver, gold, etc. Prerequisite, course 51. Allen.

52J.—ELECTROLYTIC ESTIMATION OF METALS. Two hours credit. Second semester, by appointment. A laboratory course. Prerequisite, course 51. Allen.

54.—SANITARY WATER ANALYSIS. Five hours credit. First semester, 8:30 to 10:30. (Bacteriology 53E.) Open to students in engineering and to College Juniors and Seniors who have taken chemistry 3; not open to chemical engineers and College students majoring in chemistry. Part of the semester will be devoted to bacteriological technic and reading along general lines, followed by special work on the bacteriology of water and sewage. The remainder of the semester will be spent in chemical quantitative analysis of water and sewage and interpretation of results of sanitary tests. Young and Bruckmiller.

62.—ELEMENTARY ORGANIC CHEMISTRY. Five hours credit. First semester. Recitations, M. W. F., at 9:30. Laboratory, Tu. and Th. mornings. Required of chemical-engineering students. In this course the aliphatic series only is discussed, the aromatic series being reserved for organic chemistry 63. Prerequisite, 10 hours chemistry. Dains.

63.—ADVANCED ORGANIC CHEMISTRY. Five hours credit. Second semester. Recitations, M. W. F., at 9:30. Laboratory, Tu. and Th. mornings. Aromatic series. Required of chemical-engineering students. Prerequisite, course 62. Dains.

70.—PHYSICAL CHEMISTRY I. Five hours credit. First semester, six hours, at 10:30. A course paying special attention to electrochemistry. Lectures, recitations, and laboratory work. Prerequisites, course 3 or course 51, physics 1E and 2E, and mathematics 5E. Required of chemical- and electrical-engineering students; optional for mining engineers. Cady.

71.—PHYSICAL CHEMISTRY II. Five hours credit. Second semester, seven hours, at 10:30. Lectures, recitations, and laboratory work. Required of chemical-engineering students. Cady.

80.—INORGANIC INDUSTRIAL CHEMISTRY. Three hours credit. Second semester, at 11:30. Required of Junior chemical-engineering students. A study of the inorganic industries, including such topics as the manufacture of acids, alkalies and other chemicals, fertilizers, paints and pigments, glass and cement, and the purification of water. Prerequisites, courses 2 and 3. Whitaker, Parkhurst.

81.—ORGANIC INDUSTRIAL CHEMISTRY. Three hours credit. First semester, at 9:30. Required of Senior chemical-engineering students. A

study of the organic industries, including such topics as the refining of petroleum, the distillation of wood and coal, packing houses, fermentation, soaps, leather, paper, starches, sugars, dyestuffs, etc. Prerequisites, courses 2, 3, and 62. Whitaker.

CIVIL ENGINEERING.

Professors: RICE (H. A.), Chairman, WILLIAMS.

Associate Professors: HASKINS, McNOWN.

Assistant Professors: BROWN (F. L.), ROBERTS.

1.—ELEMENTARY SURVEYING. Three hours credit. First semester, two hours of class work, Tu. Th., at 10:30 and 11:30; one hour of field work, computation and plotting, on Tu. or Th., from 1:30 to 4:30. Required of civil- and mining-engineering Sophomores. Use and care of engineer's chain, transit, and level. Adjustments of transit and level. Land surveying methods and computations. Prerequisite, mathematics 3.

McNOWN.

2.—HIGHER SURVEYING. Three hours credit. Second semester, Tu. Th., at 9:30 and 10:30, with field work W. or F., at 1:30 to 4:30. Required of civil- and mining-engineering Sophomores. Topographic and hydrographic surveying. Control of surveys, including introduction to engineering astronomy. Prerequisite, civil engineering 1.

McNOWN.

3.—SUMMER FIELD WORK. Ten hours a day for four weeks at the close of the college year is required of Sophomore civil-engineering students, and the same for two weeks is required of Sophomore mining-engineering students. A topographical survey of an area is made from a camp. Practice in taking topography by transit and stadia, and by plane table, measurement of a base line, triangulation, leveling, and determination of azimuth latitude and time, constitute the work. Prerequisite, civil engineering 2.

McNOWN and F. L. BROWN.

4.—RAILWAY SURVEYING. Two hours credit. Second semester, Tu. Th., at 1:30. Required of civil-engineering Sophomores. A study of railway curves and earthwork, with field exercises. Prerequisite, civil engineering 1.

McNOWN.

50.—ELEMENTARY SURVEYING. Three hours credit. Both semesters. Two hours of class work, Tu. Th., at 9:30 in the first and at 8:30 in the second semester. One hour of field from 1:30 to 4:30, on Friday in the first and on Monday in the second semester. Required of Senior mechanical, electrical, and architectural students. A brief course based on course 1 and 2.

McNOWN and ROBERTS.

51.—CARTOGRAPHY. Two hours credit. First semester, Tu. Th., from 1:30 to 4:30. Required of Junior civil-engineering students. Map projection and the preparation of an accurate topographical map based on the field maps prepared in civil engineering 3. Prerequisite, civil engineering 3.

McNOWN.

52.—CITY PLANNING. Two hours credit. Second semester, W. F., at 8:30. Required of Junior sanitary students, and optional to Senior civil-engineering students. A study of city planning from the modern viewpoint, under such topics as city planning abroad, the American city, design of streets and street systems, parks and playgrounds, civic centers, water features, methods of acquiring land, and legislation. Lectures and assigned readings.

McNOWN.

53.—GEODESY. Three hours credit. First semester. Two hours in classroom and one in field, and computation. By appointment. Optional to Seniors. A brief study of the construction, use, and adjustment of the higher instruments of precision, and their use in the determination of the size and figure of the earth, including a study of the application of the method of least squares to the adjustment of observations. Prerequisite, civil engineering 3.

McNOWN.

55.—RAILWAY SURVEYING. Four hours credit. First semester, Junior year, Tu. Th., at 9:30, M. W., at 1:30. A study of methods of laying out and constructing railways, with field practice consisting of a location survey of a line of sufficient length to familiarize the student with standard methods of doing such work; calculation of waterways; bridge surveys; yards, turnouts, and easement curves. Prerequisites, civil engineering 1, 2, 3, and 4. Williams.

57.—RAILWAY LOCATION. Three hours credit. Second semester, Junior year, M. W. F., at 11:30. The principles involved in the economic location and construction of railways. Analysis of traffic and operating expenses. The influence of proposed changes in location upon the amount of total revenue, the fixed charges, the operating expense, and the dividend-paying capacity of the road. Prerequisite, civil engineering 55. Williams.

58.—RAILWAY TERMINALS AND SIGNALING. Two hours credit. First semester, Senior year, Tu. Th., at 8:30. A general study of terminal problems, the design of yard layouts and of terminal structures. Some time given to signal engineering. Prerequisite, civil engineering 55. Williams.

59.—RAILWAY CONSTRUCTION AND MAINTENANCE. Three hours credit. Second semester, Senior year, M. W. F., at 10:30. An advanced course in railway engineering, covering tunneling, economic handling of materials, masonry structures, trestles, timber preservation, as well as the theory and practice of railway maintenance. Prerequisite, civil engineering 55. Williams.

61.—STRESSES IN FRAMED STRUCTURES. Five hours credit. First semester, five hours, at 11:30. Analytical and graphical calculation of stresses in framed structures under various forms of loading. This course must be preceded by course 51 in mechanics. H. A. Rice.

62.—BRIDGE DESIGNING. Four hours credit. Second semester, eight hours, 1:30 to 4:30. A study in bridge details and the dimensions of parts. Students work out designs for a plate girder and a simple truss. Must be preceded by course 61. H. A. Rice.

64.—MASONRY. Two hours credit. First semester, Senior year, Tu. Th., at 10:30. Stone and brick masonry; the science of proportioning concrete; foundations, including pile driving, cofferdams, pneumatic caissons, etc.; dams, retaining walls, piers and abutments, masonry bridges. Prerequisite, mechanics 50 and 51. Williams.

65.—REINFORCED CONCRETE. Three hours credit. Senior, first semester, M. W. F., at 10:30. A course in the modern theory and practice in the design of beams, floor slabs, columns, conduits, retaining walls, arches, and others forms of reinforced concrete construction. Mathematical theory, study of plans, and design of typical structures. Prerequisite, mechanics 51. H. A. Rice.

66.—REINFORCED CONCRETE DESIGN. One hour credit. Second semester, Senior. This course supplements course 65. Designs of beams, slabs, retaining walls, etc., together with a complete analysis of a reinforced-concrete arch, are made. Prerequisite, civil engineering 65. H. A. Rice.

67.—HIGHER STRUCTURES. Three hours credit. Second semester, Senior, M. W. F., at 9:30. An advanced course in bridges, including swing bridges, cantilever bridges, suspension bridges, and arches. Some work will be given in calculations of deflections and statically indeterminate stresses. H. A. Rice.

70.—SANITARY ENGINEERING I. Three hours credit. First semester, three hours, M. W. F., at 11:30. An elementary course in the collection, removal, and disposal of city sewage. Principles of the design and construction of sewers and storm drains. The collection and distribution of

water supplies. Requisites of a supply as to quality and quantity. Design of distribution, collection, and storage works. Prerequisite, mechanics 55. Haskins.

71.—SANITARY ENGINEERING II. Four hours credit. Second semester, four hours, M. Tu. W. Th., at 9:30. A more detailed study of the subjects treated in course 59. The purification of public water supplies and the treatment of sewage. Haskins.

72.—SANITARY ENGINEERING DESIGN. Five hours credit. Second semester, five hours, at 1:30. An advanced course to be taken simultaneously with course 71. The student works out, by practical problems, the principles learned in courses 70 and 71. Haskins.

73.—SANITARY SCIENCE AND PUBLIC HEALTH PROBLEMS. Two hours credit. First semester, two hours, Tu. Th., at 9:30. A broad general view of the large body of sanitary science upon which the modern practice of sanitation is based. The effects of good practice in such matters as public water supply, sewerage and drainage, state and federal control over the pollution of streams, vital statistics. Haskins.

74.—WASTE AND GARBAGE DISPOSAL. One hour credit. Second semester, one hour, M., at 11:30. A lecture course in the practice of street cleaning, refuse and garbage collection and disposal. Haskins.

75.—ROADS AND PAVEMENTS. Two hours credit. Second semester, Senior year, Tu. Th., at 11:30. A study of methods used in the construction and improvement of country roads and city streets. An extended study of paving materials and of the principles governing the selection of a pavement. Some time given to laboratory testing of materials. Prerequisite, civil engineering 1, 2, 3, and 4. Williams.

ECONOMICS.

Professor: BOYNTON.
Assistant Professor: HARPER.

1E.—ELEMENTS OF ECONOMICS. Three hours credit. First semester, M. W. F., at 11:30. This course endeavors to explain the general laws of man's relation to wealth. Special attention is given to the parts of the subject of special interest to engineering students, such as corporations, the economic activities of municipalities, organized labor, and the general labor problem.

3.—ECONOMIC HISTORY OF THE UNITED STATES. Three hours credit. Second semester, at 9:30. Attention is given to colonial agriculture, industry, and trade as an introduction to the course. After 1789, the main lines of study are the banking, transportation, and tariff history of the United States, with especial attention to the development of the natural resources, and the rise of manufactures, and the expansion of corporate methods. Prerequisite, course 1. Boynton.

3E.—THE ELEMENTS OF ACCOUNTING. Three hours credit. First semester, M. W. F., at 2:30. This course serves as an introduction to the field of accounting. The principles underlying various accounting practices are studied, and enough problems are solved to familiarize the student with the more common and simpler forms used in representing the progress and condition of a business firm. Prerequisite, course 1E or its equivalent. Harper.

ELECTRICAL ENGINEERING.

Professor: SHAAD.
Assistant Professor: JOHNSON (F. E.).
Instructors: CURFMAN, HARTMAN.

Courses 50 to 52, and 54 to 58, inclusive, and 61 are required of all electrical-engineering students. Courses 50, 53, 54, and 55 are required of mechanical-engineering students. Courses 59 and 62 are optional for electrical-engineering students.

50.—DYNAMO MACHINERY. Three hours credit. Junior, first semester, three hours, at 10:30 for electrical-engineering students, and at 8:30 for Senior mechanical-engineering students. Theory of direct-current generators and motors. Prerequisites, physics 1E and 2E.

F. E. Johnson.

51.—THEORY OF ALTERNATING CURRENTS. Five hours credit. Junior, second semester, five hours, at 8:30, for electrical-engineering students. A mathematical treatment of alternating-current phenomena and the theory of alternating-current machinery, fundamental types. Prerequisite, course 50.

Shaad.

52.—DYNAMO MACHINERY. Five hours credit. Senior, first semester, five hours, at 8:30. Advanced theory of alternating-current machinery.

Shaad.

53.—THEORY OF ALTERNATING CURRENTS. Three hours credit. Second semester, three hours, M. W. F., at 11:30 for Senior mechanical-engineering students. A study of the theory of alternating currents and alternating-current machinery, together with a discussion of motor applications. Prerequisite, course 50.

Shaad.

54.—ELECTRICAL LABORATORY. One and one-half hours credit. Junior, first semester, three hours, two days per week on alternate weeks, 1:30 to 4:30. An experimental course for the purpose of illustrating the principles of direct-current dynamo machinery and acquainting the student with the types and performance of direct-current apparatus. Must be preceded or accompanied by course 50. F. E. Johnson and Curfman.

55.—ELECTRICAL LABORATORY. One and one-half hours credit. Junior, second semester, three hours, two days per week on alternate weeks, 1:30 to 4:30. A continuation of course 54. Must be preceded or accompanied by course 51. More advanced work with direct-current machinery is given and experiments with alternating-current apparatus are introduced. Some time is devoted to the calibration of electrical instruments.

F. E. Johnson, Curfman.

56.—ELECTRICAL LABORATORY. One and one-half hours credit. Senior, first semester, three hours, two days per week, 1:30 to 4:30. Advanced experiments with electrical machinery and the testing of machines, chiefly of alternating-current types. Must be accompanied by course 52.

F. E. Johnson.

57.—ILLUMINATING ENGINEERING. Three hours credit. Senior, second semester, three hours, Tu. Th., at 11:30. A course in illumination and photometry, in which the available light sources are studied and the methods of application to artificial illumination of streets and buildings are discussed. Laboratory and field work in the measurement of light sources and illumination.

F. E. Johnson.

58.—ELECTRIC POWER TRANSMISSION AND ELECTRIC RAILWAYS. Five hours credit. Senior, second semester, five hours, at 9:30. A series of lectures and recitations devoted to the study of the principles involved and the methods used in the design of transmission and distributing systems and the theory and practice of the design, construction, and operation of electric-railway systems. Prerequisite, course 52.

F. E. Johnson.

59.—ELEMENTARY TELEPHONY. Five hours credit. Second semester, five hours by appointment. Lectures, recitations, and laboratory work. The principles that underlie all telephone apparatus, and practical experiments with the fundamental telephone transmitters, receivers, and central-station arrangements. Optional for Juniors or Seniors.

Shaad.

60.—ELEMENTS OF ELECTRICAL ENGINEERING. Three hours credit. First semester, at 9:30. A course covering the general field of electrical engineering, and prepared especially for civil-engineering students. Junior or Senior year.

Shaad.

61.—PROFESSIONAL THESIS. Senior, first semester, three hours, and second semester, nine hours, by appointment. Shaad, or other instructors, according to the line of work chosen.

62.—CENTRAL STATIONS. Three hours credit. Three hours in the classroom, M. W. F., at 10:30, and one period in the drafting room each week. A study of the design, construction, operation, and management of central electrical stations and substations. Shaad.

63.—ADVANCED ELECTRICAL LABORATORY. Five hours credit. Seniors, second semester, by appointment. A continuation of course 56. More advanced and extended experiments with electrical machinery and circuits, introducing the experimental study of transient electrical phenomena. F. E. Johnson.

64.—ELECTRICAL ENGINEERING FOR ARCHITECTS. Three hours credit. Second semester, three hours, at 9:30. A course covering electrical installations for buildings. For students in architectural engineering, either Junior or Senior year. Shaad.

ENGINEERING.

Dean: WALKER.

1.—ENGINEERING LECTURES. First semester, Tu., at 11:30. A course of lectures given to Freshmen during the first semester. The purpose is twofold: first, to give the student a more adequate idea of engineering as a profession; second, to assist those who have not decided upon the courses of study to be pursued to gain a more definite conception of the field covered in each. About one-third of the course is given by the Dean and the remainder by other members of the engineering faculty.

2.—COMMERCIAL ENGINEERING. Three hours credit. Second semester, sophomore, M. W. F., at 9:30; the Wednesday session continuing three hours as a laboratory period. An introduction to business problems with special reference to production, distribution, and marketing. Principles of accounting and cost finding as applied to machine building enterprises. Walker.

51.—MANUFACTURING. Two hours credit. First semester, Senior, Tu. Th., at 8:30. Manufacturing processes employed in certain typical industries; elements of cost; power as a factor in costs; power applications; engineering practice in the industries with especial reference to selection of equipment. Walker.

52.—INDUSTRIAL ADMINISTRATION. Three hours credit. Second semester, at 8:30. Development of modern industrial systems; forms of ownership—partnerships and corporations; contract principles, and practice in contract writing for engineering work; organization of transportation and manufacturing companies; analysis of costs; labor wage systems. Special lectures on real property, agency, and torts. Mining-engineer students are allowed to take a portion of the course for two hours credit. Walker and law lecturers.

ENGINEERING DRAWING.

Associate Professor: HOOD.

Assistant Professors: COCHRAN, ROBERTS.

1.—FREE-HAND AND MECHANICAL DRAWING. Two hours credit. Freshman, both semesters; six hours or twelve hours; first semester, M. W. F., 8:30 to 10:30; or Tu. Th., 8:30 to 11:30; or M. Tu. W. Th., 1:30 to 4:30; or F., 1:30 to 4:30, and Sat., 8:30 to 11:30. Second semester, M. W. F., 8:30 to 10:30; or M. W., 1:30 to 4:30. Engineering lettering in pencil and in ink. Free-hand working sketches and perspective

sketches of simple machine parts. Working drawings of simple machine parts. Penciling, tracing, and blue-printing. Detailing machine parts from assembly drawings. Hood, Cochran, Roberts.

2.—MACHINE DRAWING. Two hours credit. Freshman, eighteen weeks or nine weeks of both semesters; six hours or twelve hours. Same hours as in course 1. Sketches of machine parts and preparation of working drawings; detailing of machines from sketches, notes, assembly drawings, and assembled machines; tracing and blue-printing; notes and lectures on drafting-room methods. Each student prepares complete drawings for some simple machine. Hood, Cochran, Roberts.

3.—DESCRIPTIVE GEOMETRY. Three hours credit. Freshman, second semester, three hours, M. W. F., at 8:30, 9:30, 10:30, 11:30, and 3:30; also first semester, at 11:30. Principles of projection. Execution of a large number of original exercises. Hood, Cochran.

ENGLISH LANGUAGE AND LITERATURE.

Associate Professor: RAYMOND.
Instructors: LAIRD, HANLEY.

The instruction in this department, while in essentials parallel to that in the College, is shaped with special reference to the other work of engineering students. Three of the courses here numbered are required before graduation; for students who wish to spend more time in work of this kind appropriate classes in the College are open.

1E.—RHETORIC I. Three hours credit. First semester, at 8:30, 9:30, 10:30, 11:30, 2:30, and 3:30; second semester, at 11:30. Written exercises; with study of language usage. Required of all Freshmen.

Raymond, Laird, Hanley.

2E.—RHETORIC II. Two hours credit. Second semester, at 8:30, 9:30, 10:30, 11:30, 2:30, and 3:30. Continuation of course 1E.

Raymond, Laird, Hanley.

59.—ADVANCED COMPOSITION I. Three hours credit. Both semesters; first semester, at 8:30 and 11:30; second semester, at 8:30 and 9:30. Practice in the gathering and analyzing of material, and in the presenting of information and opinion in written papers. Required of all engineering students, one semester, in Junior or Senior year.

Raymond.

59A.—ADVANCED COMPOSITION II. Three hours credit. By appointment. Continuation of course 59, with special regard to writing for publication. Optional for Seniors.

Raymond.

GEOLOGY.

Professor: HAWORTH.
Assistant Professors: TODD, HAYNES.

1.—ELEMENTARY GEOLOGY. Five hours credit. First semester, 8:30, 9:30; second semester, 8:30, 9:30, 10:30, 11:30, 2:30. A study of the elementary principles of geology, including a general outline of geologic principles and geologic agencies. An acquaintance with the elements of chemistry, zoölogy, and botany will be of advantage in this course. Required of Junior civil and Sophomore mining engineering students.

Todd, Haynes.

54.—ECONOMIC GEOLOGY I. Three hours credit. First semester, three hours, M. W. F., at 9:30. A general study of the metallic and non-metallic products of the mine and quarry, considered from a scientific and practical standpoint, including the nature, origin, amount, and geographic and geologic distribution of the same. Must be preceded by elementary chemistry and course 1, and mineralogy 10. Required of Junior mining-engineering students. Lectures and library work.

Haworth.

55.—ECONOMIC GEOLOGY II. Five hours credit. Second semester, two hours, at 10:30. A continuation of course 54. Nonmetallic products.

Haworth.

Other courses in geology are open as optionals to engineering students. For details, see the courses listed under The College.

GERMAN.

Assistant Professor: BRIGGS.*

Instructor: HAWKINS.

1.—ELEMENTARY GERMAN.—ESSENTIALS OF GRAMMAR. Five hours credit. First semester, at 10:30. The first sixty lessons of Mosher and Jenney's Lern- und Lesebuch. Hawkins.

2.—PROSE READINGS. Five hours credit. Second semester, at 10:30. Mosher and Jenney's Lern- und Lesebuch completed. Reading of selected prose texts. Hawkins.

3B.—SCIENTIFIC GERMAN. Five hours credit. First semester, at 8:30. A thorough review of grammar, Das Edle Blut or equivalent text, forty to fifty pages, as introductory reading matter, followed by a scientific German reader. The aim of the course is to introduce the student to the style and vocabulary of scientific German and develop the ability to read simple scientific writings. Hawkins.

4B.—SCIENTIFIC GERMAN. Five hours credit. Second semester, at 8:30. Reading of scientific German texts in class and assigned readings on selected topics outside of class. The aim of this course is to develop the rapid reading of more advanced scientific German in special fields. Hawkins.

MACHINE CONSTRUCTION.

Assistant Professor: JONES (F. E.).

Instructors: WILTFONG, ROCKLUND, WHITE.

Assistant Instructor: HARTLEY.

The work given is designed to suit the needs of engineering students. It consists of practice work following demonstrations and recitations in the classroom. Textbook preparation and note writing are required in the class work. One hour of each regularly assigned weekly period is devoted to classroom work during a portion of the semester. In the advanced courses attention is given to modern methods of welding, heat treatment of high-carbon steels, machine-shop construction, the grouping of machines, and methods followed in standardizing production.

1.—FOUNDRY PRACTICE. One hour credit. Both semesters, three hours per week. Molding, and management of the cupola furnace and brass furnace. Practice in melting and pouring iron and nonferrous alloys. Each squad of students is required to have entire charge of the melting and casting of a heat of iron at least once during the course. Required of mechanical-, electrical- and chemical-engineering students.

Rocklund.

2.—PATTERN MAKING. One hour credit. Both semesters, three hours per week. The principles of pattern making are studied in a practical way by having each student make patterns that are actually used in the foundry. Required of students in mechanical, electrical and chemical engineering. F. E. Jones and Hartley.

3.—FORGING. One hour credit. Both semesters, three hours per week. Complete course, including stock calculations, bending, drawing, welding, tempering, and hardening. Required of all excepting architectural students. Wiltfong.

5.—BENCH WORK. One hour credit. First semester, three hours per week. A machine-shop course in the use and care of tools; practice in

*Absent on leave, 1916-'17.

filing, chipping, drilling, and riveting. Required of students in mechanical, electrical, and chemical engineering. White.

6.—MACHINE TOOL WORK I. One hour credit. Second semester, three hours per week. Principally lathe work. Includes cutting off stock, centering, straight and taper turning and thread cutting; turning steel, wrought iron, cast iron and brass. Required of students in mechanical, electrical, chemical and mining engineering. White.

7.—MACHINE TOOL WORK II. One hour credit. Second semester, three hours per week. Use of planer, shaper, milling machine, boring mill, turret lathe; laying out and making machine parts from the drawing; gear cutting. Required of students in mechanical engineering. White.

8.—ADVANCED MACHINE SHOP PRACTICE. One hour credit. First semester, three hours per week. Tool making. Hardening and tempering; grinding; autogenous welding; jig making; preparing and using high-speed and alloy steels; assembling machinery. Required of students in mechanical engineering. White.

MATHEMATICS.

Professor: ASHTON.

Assistant Professors: JORDAN, WHEELER, LEFSCHETZ.

Instructor: LARSEN.

1.—SOLID GEOMETRY. Two hours credit. Second semester, two hours, at 11:30. The usual theorems and constructions of standard textbooks and applications to the mensuration of surfaces and solids. Larsen.

2a.—COLLEGE ALGEBRA. Three hours credit. First semester, three hours, 8:30, 9:30, 10:30, 2:30, 3:30; second semester, three hours, 8:30. Review of elementary algebra; graphic representation, logarithms, determinants. Required of all Freshmen in the School of Engineering. Jordan, Wheeler, Lefschetz, Larsen.

2c.—COLLEGE ALGEBRA. Five hours. First semester at 8:30. This section is intended for those who enter with only one unit of algebra and will include a more thorough review of elementary algebra, together with the subject named in 2a.

3.—PLANE TRIGONOMETRY. Two hours credit. First semester, two hours, 8:30, 9:30, 10:30, 2:30, 3:30; second semester, two hours, 8:30. The six trigonometric functions, principal formulas of plane trigonometry, solution of triangles and practical problems. Required of all Freshmen in the School of Engineering. Jordan, Wheeler, Lefschetz, Larsen.

4E.—ANALYTIC GEOMETRY. Five hours credit. First semester, five hours, at 10:30; second semester, five hours, 8:30, 9:30, 10:30, 2:30, 3:30. Elementary theory of equations, Horner's method, the straight line and circle, conic sections, higher plane curves, solid analytic geometry. Required of all Freshmen in the School of Engineering. Jordan, Wheeler, Lefschetz, Larsen.

5E.—CALCULUS I. Five hours credit. First semester, five hours, 8:30, 9:30, 10:30; second semester, five hours at 9:30. Differential calculus, applications to geometry and mechanics, maxima and minima, integral calculus, simple applications to length, areas, and volumes. Required of all Sophomores in the School of Engineering. Ashton, Jordan, Wheeler, Lefschetz.

6E.—CALCULUS II. Three hours credit. First semester, three hours, at 11:30; second semester, three hours, 8:30, 9:30, 10:30. Applications of the calculus to problems of solid geometry, double and triple integration, applications to areas, volumes, centers of gravity, and moments of inertia; simple differential equations. Required of all Sophomores in the civil, electrical, and mechanical courses. Ashton, Jordan, Lefschetz.

57E.—SELECTED TOPICS IN ENGINEERING MATHEMATICS. Second semester, three hours, at 11:30. Complex numbers and vectors, exponential and trigonometric series, hyperbolic functions, differential equations of electrical and mechanical engineering, empirical curves, methods of approximation and numeral calculation. The course may be modified to suit the needs of the class. Optional for Juniors, Seniors, and graduates. Jordan.

For other courses in mathematics, see The College.

MECHANICAL ENGINEERING.

Professors: WALKER, SIBLEY (Chairman).

Associate Professor: SLUSS.

Assistant Professors: GARVER, JONES (F. E.).

1.—MACHINE DRAFTING. One hour credit. Sophomore, first semester, M. or Tu., 1:30 to 4:30, three hours. Making of working drawings from sketches of assembled parts, followed by an assembly drawing from detailed working drawings. Garver.

2.—MECHANISM. Three hours credit. Junior, first semester, Tu. Th., at 9:30, and F., 1:30 to 4:30. A study of the motion of machine parts and of methods of transmission of motion by gears, belts, cams, and links. Recitations and drawing for mechanical-engineering students. Text, Sibley's Pure Mechanism. Garver.

3.—ELEMENTARY MACHINE DESIGN. Three hours credit. Sophomore, second semester, M. W., at 9:30; Tu., 1:30 to 4:30. Design of representative machine parts and study of their relative motions. For electrical-engineering students. Garver.

4.—STEAM MACHINERY. Two hours credit. Sophomore, first and second semesters, two hours, Tu. Th., at 10:30. (a) Fuels, combustion, and steam generation. (b) A study of boiler and engine types. Principal text, Heat Engines, by Allen and Bursley. Required of electrical-engineering students. Sluss.

5.—ENGINES AND BOILERS. Three hours credit. Sophomore, second semester, M. W. F., at 9:30; and five exercises in the steam laboratory, Sat., 8:30 to 12:30. A brief study of the general problem of steam power generation from the standpoint of the installing engineer. Text, Heat Engines, by Allen and Bursley. Required of civil-engineering students. Physics 1E is a prerequisite. Garver.

6.—STEAM ENGINEERING. Four hours credit. Sophomore, first semester, M. W. F., at 8:30, and W. Th., 1:30 to 4:30. Elements of steam machinery, with special reference to combustion of fuels, boiler types, engine mechanism and power-plant auxiliaries. Laboratory practice in proximate analysis of coal, and flue gas analysis. For mechanical-engineering students. Sluss.

50.—MACHINE DESIGN. Four hours credit. Junior, second semester, M. W. F., at 10:30, and M. 1:30 to 4:30. Solution of problems in the design of general machine parts, including cylinders, plates, springs, riveted joints, bearings, journal shafts, gears, pulleys, and belts. Lectures, recitations, and drawing. Garver.

51.—THERMODYNAMICS. Three hours credit. Junior, first semester, M. W. F., at 8:30. The relation between heat and mechanical energy; theory of heat engines. Must be preceded by Physics 1E and calculus. Required of mechanical-engineering students. Walker and Sluss.

52.—HEAT-ENGINE THEORY. Three hours credit. Junior, first semester, M. W. F., at 9:30. A course for electrical-engineering students, treating the science of thermodynamics more briefly than in the preceding course and including engine applications. Garver.

53.—MECHANICS OF HEAT ENGINES. Two hours credit. Junior, second semester, two hours, Tu. Th., 9:30. Valve gears and governors of steam and internal combustion engines and turbines. Centrifugal inertia and shaking forces of the moving parts. Required of electrical-engineering students. Course 52 is a prerequisite. Sibley.

54.—HEATING, VENTILATING, AND REFRIGERATING. Two hours credit. Junior, second semester, two hours at 8:30. Laws of heat transfer, amount of air required for ventilation, methods and apparatus employed in modern buildings, central heating plants. Sibley.

56.—HEAT ENGINE DESIGN. Four hours credit. First semester. Three hours recitation and three hours drawing per week. Includes a brief review of the thermodynamics of engines and turbines. Determination of sizes for given horsepower; methods of compounding, regulation and balancing; study of details, including valves and valve gears, cylinders, rotating and reciprocating parts of engines, and nozzles, blades, and rotors of turbines. Required of mechanical-engineering students. Sibley.

57.—STEAM-ENGINE AND TURBINE DESIGN. Three hours credit. Second semester. Application of principles covered in course I to the design of special types of turbines. Optional for mechanical-engineering students. Sibley.

58.—GAS-ENGINE AND COMPRESSOR DESIGN. Two hours credit. Senior, first semester, M. Tu., 1:30, W. Th., of alternate weeks, 1:30 to 4:30. General theory and practice of gas-engine and compressor design and construction. Sibley.

60.—SHOP METHODS AND EQUIPMENT. One and one-half hours credit. Second semester. One hour recitation and three hours laboratory per week. A study of the design, construction and operation of the modern machine shop. Small tools and equipment; machine tools and shop layouts, safety devices; the routing and tracing of work; theory of time studies and instruction-card writing; cost accounting. Sibley, Jones.

61.—STRUCTURAL DESIGN. Two hours credit. Senior, optional, first semester. Stresses in steel and reinforced concrete buildings, and design of members of the structure; design of chimneys, bins, and retaining walls. Sibley.

62.—INDUSTRIAL-PLANT DESIGN. Three hours credit. Second semester. Planning of manufacturing plants; location, transportation; routing of work; handling material. Senior optional. Sibley.

63.—PUMPS AND COMPRESSORS. Three hours credit. Senior optional, second semester. Theory of the design and operation of water-power machinery and of rotary and reciprocating compressors and pumps. Sibley.

64.—MECHANICAL LABORATORY. One hour credit. Second semester, Junior, W. or Th., 1:30 to 4:30. Calibration of thermometer and indicator springs, physical properties of lubricating oils, valve setting, commercial testing of boilers, engines, and pumps. For mechanical-engineering students. Sluss and Garver.

65.—POWER LABORATORY. One and one-half hours credit. Senior, first semester, M. or Tu., 1:30 to 4:30. Calibration of apparatus, fuel testing, laboratory tests of steam and gas prime movers, complete power-plant test. Outside preparation of preliminary and final reports. Prerequisites, mechanical-engineering 4, 52, and 53. For electrical-engineering students. Sluss.

66.—HEAT-ENGINE LABORATORY. One and one-half hours credit. Senior, second semester, M. or Tu., 1:30 to 4:30. Study of experimental engineering methods and their application to complete tests of boilers, steam and gas prime movers, compressors, and refrigerating units. Drill

in report writing, and outside reading of literature bearing on power development. Prerequisites, mechanical-engineering 6, 51, and 56. For mechanical-engineering students. Sluss.

67.—**THESIS.** Three hours credit. Senior, both semesters. F., 1:30 to 4:30. Walker, Sibley, and Sluss.

68.—**SUMMER VACATION WORK.** Two months to be spent in regular work in some shop or manufacturing plant of good standing. A report on this work, with a certified statement from the shop foreman or the superintendent, must be presented before credit can be given.

MECHANICS.

Professors: RICE (H. A.), WILLIAMS.

Assistant Professors: BROWN, ROBERTS, JONES (J. O.).

50.—**MECHANICS.** Five hours credit. Junior, first semester, five hours, at 9:30, 10:30, 11:30; second semester, 10:30. A study of the laws of statics and dynamics. Action of forces upon bodies, and the resulting motions. Required of all engineering students. Prerequisite, calculus I. Brown, Roberts.

51.—**STRENGTH OF MATERIALS.** Four hours credit. Junior, first semester, four hours, 8:30; second semester, 8:30, 9:30, 10:30. The theory of resistance to stress and application to engineering construction. Required of all engineering students. Prerequisite, mechanics 50. Brown, Roberts, J. O. Jones.

52.—**TESTING OF MATERIALS.** One hour credit. Junior, second semester, four hours, M. W. Th. or F., afternoon, or Sat. morning. A laboratory course to accompany course 51. The testing of iron, steel, wood, and other materials of construction for resistance to tension, compression, torsion, bending, and shearing. Experimental determination of the limits of safe loading. The testing of paving brick. Brown, Roberts.

53.—**GRAPHIC STATICS.** Two hours credit. Junior, second semester, nine hours, 1:30 to 4:30. The properties of equilibrium polygons and other methods of representing the actions of forces, with application to the determination of stresses in beams, trusses, and arches. Lectures and drawing. Prerequisite, mechanics 50. Brown.

54.—**ENGINEERING MATERIALS.** Two or five hours credit. First semester, ——— hours, by appointment. A study of the methods of manufacture of structural materials and the different means and machines used in their testing. Opportunity will be given for specialization along some particular line, if desired, and considerable experimental work may be done in the laboratory. Recitations, lectures, library, and laboratory work. Optional for Seniors. Prerequisite, mechanics 51. H. A. Rice.

55.—**HYDRAULICS.** Three hours credit. First semester, 9:30; second semester, three hours, 9:30 to 10:30. A study of the laws governing the pressure and flow of liquids. Calculation of the flow through pipes and over weirs. The principles and types of pumping and hydraulic power machinery. Required of Junior civil and Senior mechanical-engineering students. Prerequisite, mechanics 50. J. O. Jones.

56.—**HYDRAULIC LABORATORY.** One hour credit. First and second semesters, two hours, M. W. or F., 3:30 to 5:30. A course to accompany course 55. Experimental work with the flow of water over weirs and through orifices and pipes, and in testing hydraulic machinery. Required of Junior civil and Senior mechanical-engineering students. J. O. Jones.

57.—**HYDRAULIC CEMENT.** One hour credit. Second semester, two hours, M. or Th., 3:30 to 5:30. A laboratory course in testing hydraulic cements and making comparison of their qualities. Reading, experimental work, and reports of tests made. For Senior civil-engineering students. Prerequisite, civil engineering 64. Williams.

58.—HYDRAULIC POWER. Three hours credit. First semester, by appointment. Water-power development. Rainfall and runoff, stream flow, preliminary plant layout, selection of standard water turbines, turbine design. Senior optional. J. O. Jones.

METALLURGY.

Professor: WHITAKER.
Instructor: PARKHURST.

53.—ASSAYING AND METALLURGICAL ANALYSIS. Three or five hours credit. Second semester, five or ten hours, Tu. Th., 1:30 to 3:30. The first half of the semester is devoted to the fire assay of gold, silver, and other metals; the second half to the volumetric assay of ores and furnace products. Junior mining-engineering students are required to take the entire course, carrying five credits; the Senior chemical-engineering students are required to take fire assaying the first half of the semester, and will receive three credits. Whitaker, Parkhurst.

90.—METALLURGY I. Three hours credit. First semester, three hours, at 11:30. General metallurgy and the metallurgy of iron and steel. Lectures and recitations. Must be preceded by chemistry 3. Required of Junior mechanical-engineering students and Senior chemical-engineering students. Whitaker.

91.—METALLURGY II. Three hours credit. Second semester, three hours, M. W. F., at 9:30. Metallurgy of lead, zinc, and copper, followed by that of silver, gold, mercury, and tin. Required of Senior mining and chemical-engineering students. Prerequisite, chemistry 3. Whitaker.

92.—METALLURGICAL LABORATORY. Either semester, two hours. By appointment. Pyrometric and calorimetric measurements, preparation of silicates and alloys, oxidization and reduction reactions, amalgamation, chlorination, cyaniding and leaching, etc. Optional for Juniors, Seniors, and graduate students who have taken or are taking course 90 or course 91. Parkhurst.

93.—GENERAL METALLURGY. Two hours credit. First semester, Tu. Th., 11:30. Physical properties of metals and alloys, thermal analysis, the measurement of high temperatures, refractories, slags, matte bulion, typical metallurgical operations. Required of chemical engineers. Whitaker, Parkhurst.

94.—IRON AND STEEL. Two hours credit. Second semester, two hours, Tu. Th., 9:30. A repetition in briefer form of course 90. Required of Junior mining-engineering students. Whitaker, Parkhurst.

MINERALOGY.

Professor: HAWORTH.
Assistant Professor: TODD.

10.—ELEMENTARY MINERALOGY I. Five hours credit. Sophomore, second semester, ten hours, 3:30 to 5:30. A brief course in crystallography, blowpipe analysis, and systematic mineralogy, consisting of lectures and laboratory work. Todd.

61.—PETROGRAPHY. Five hours credit. First semester. This course includes a study of the mineralogical and chemical composition of rocks, their origin, structural features, and classification. Haworth.

Other courses in mineralogy are open to engineering students as optionals. For these, see The College.

MINING ENGINEERING.

Professors: TERRILL, HUMBLE.
Assistant Professor: GRIDER.

1.—MINING METHODS. One hour credit. Both semesters, M. F., at 11:30. Two lectures per week on methods of prospecting, developing, and working mineral beds, masses, veins, etc. Study of methods used in mining regions for certain classes of deposits. Includes a visit to the lead-zinc district of Kansas and Missouri, and a report. Terrill.

50.—MINE SURVEYING. One hour credit. First semester, three hours per week. Instruments and methods used for underground traverse and connection surveys; shaft plumbing and special problems. Field work includes survey of tunnels under campus and actual mine surveys. Prerequisite, civil engineering 1, 2, and 3. Terrill.

51.—EXCAVATION AND EXPLOSIVES. Two hours credit. Second semester, Tu. Th., 9:30, and a minimum of ten three-hour periods of laboratory work. (a) Excavating machinery and tools. Excavation, drilling, tunneling, shaft sinking, stripping, supporting excavations with pillars, timber, masonry, rock filling, etc. Handling and transporting material. Explosives, composition, manufacture and use. (b) Practice in the above carried out in the experimental mine. Terrill.

52.—MINING LAW. One hour credit. Second semester, alternate years. Outline of the laws relating to the mining industries. Recitations and lectures. Humble.

53.—ORE DRESSING I. Two hours credit. First semester, one lecture and three hours of laboratory work. Preliminary breaking, roll crushing, jigging, coarse screening, coal washing. Required of students in coal and metal mining. A modified course covering textbook principles, open to Juniors and Seniors in the College and in the School of Engineering, is offered as a three-hour credit option. Lectures and recitations. Grider.

54.—METAL MINING. Two hours credit. First semester, Tu. Th., 11:30. Methods of prospecting and mining all kinds of mineral deposits; study of special methods, and costs of working large ore deposits; ventilation; control and measurement of air currents; surface and underground haulage; compressed-air application. Prerequisites, mining engineering 1 and 51. Terrill.

55.—MINING HYDRAULICS. Two hours credit. First semester, M. W., at 11:30. Theory of hydraulics, flow through orifices, tubes, and pipes; flow in conduits and rivers; measurement of water; hydraulic motors, pumps and hydraulic machinery; gravel deposits, drift mining, ground sluicing, hydraulic mining, river mining, dredging, and drainage. Grider.

56.—MINE PLANT AND MILL DESIGN I. Two hours credit. First semester. One lecture and three hours drafting. Graphical statics, beams and trusses, building materials, foundations; calculations relating to machine parts, transmission of power by bands, riveted joints, etc.; elementary design of mine buildings, trestles, or bins, headframes, etc. Grider.

57.—MINE ADMINISTRATION. One hour credit. Second semester. Business management, mine accounts and cost sheets. Mine accidents, care of sick and injured. Sanitation of camps. Terrill.

58.—ORE DRESSING II. Four hours credit. Second semester. Two lectures and six hours laboratory. Fine crushing and screening machinery, sand and slime concentration, flotation, stamp milling, amalgamation, cyanidation, classification, regrinding, mill sampling, miscellaneous processes of separation, and accessory apparatus. Required of students in metal mining. Grider.

59.—MINE EXAMINATION AND REPORTS. One hour credit. Second semester, three hours by appointment. Sampling tools; sampling fissure veins, coal seams, placer deposits, tailings, mill products, gases, liquids, etc.; preparing samples for the assayer; recording assays, assay maps and surveys; underground, milling and metallurgical losses; estimating tonnage; mine examination and camp equipment; writing reports.

Grider.

60.—PROFESSIONAL THESIS. Two hours credit. This may be description of a mining or metallurgical plant, or of a mining district, or may be work done in connection with course 63, or 66, or may be founded upon research work done at the University.

Terrill and Grider.

61.—COAL MINING I. Two hours credit. First semester, Tu. Th. Methods of working coal beds and handling coal. Properties of mine gases, safety lamps, explosives, ventilation, causes and prevention of explosions.

Terrill.

62.—COAL MINING II. Three hours credit. Second semester, M. W. F., at 9:30. Systems and methods of working coal, extraction, haulage, hoisting, coal-cutting tools, coal-cutting machinery, excavating machinery, mine cars and tracks, etc.; surface plants. Prerequisite, mining engineering 1 and 61.

Terrill.

63.—MINE PLANT AND MILL DESIGN II. Three hours credit. Second semester, 1 lecture and 6 hours drafting. Optional for Senior and graduate students. Advanced course in design, construction and installation of mine plants, concentrating mills, machinery, headframes, ore bins, dams, fans, foundations, tramways, flumes, sluices and pressure boxes. Preparation of working drawings, bills of materials, specifications and estimates. Prerequisite, mining engineering 56.

Grider.

64.—MINING ENGINEERING. Three hours credit. Either semester. The economic importance of geological irregularities affecting mine operations; mine maps; choosing methods and locating openings; ventilation; drainage; water supply; transportation; power problems; costs and conditions affecting costs. Prerequisite, mining engineering 54.

Grider.

65.—SUMMER WORK. Each candidate for a degree is required to give evidence of having had experience in some phase of mining work. This may be gained by an investigation of some mining district under the direction of an instructor for a period of six weeks, or by employment in mining work.

66.—ADVANCED ORE DRESSING III. Four hours credit. Second semester, Senior or graduate students. One lecture and 9 hours laboratory work, optional. Principles and schemes of mill processes. Adapting processes to specific ores, each student to choose one of the following for special study: flotation or other concentration method; amalgamation; cyanidation; chlorination; chloridizing roast; or lixiviation methods.

Grider.

67.—MINERAL LAND SURVEYING. Three hours credit. First semester, Senior and graduate students. Two lectures and one afternoon. (a) Mineral land surveying; mining claims, timber, coal and stone lands; dam, mill, tunnel, and reservoir sites; ditch, flume, and pipe lines; preparation and filing legal documents; duties of United States deputy mineral surveyors. (b) Subdividing public lands, locating, relocating, and marking corners, making plats, reports, etc. Prerequisite, civil engineering 1 and 2.

Grider.

68.—PRINCIPLES OF MINING. Three hours credit. Both semesters. Three lectures per week on methods of prospecting, developing and working mineral deposits. Course offered for Juniors and Seniors in the College and School of Engineering.

Terrill.

PHYSICAL EDUCATION.

Professor: NAISMITH.*Instructor:* HARRISON.

FRESHMAN 1. First half-semester, soccer, football, elementary gymnastics, and track work; second half-semester, basketball, tumbling, apparatus work, swimming.

FRESHMAN 2. First half-semester, apparatus work, swimming, diving, etc.; second half-semester, track athletics, high jump, etc., or lacrosse.

Freshman are required to attend classes three periods per week. Special classes are organized for engineers at such times as the majority can attend.

Additional courses will be arranged for special work and for the prescribed work which can not be done in class.

Every student may receive a thorough medical and physical examination, with the results platted on a chart. When needed, special exercises will be prescribed.

Every student who uses the gymnasium, or who is a candidate for any University team, must pass a satisfactory medical and physical examination.

PHYSICS.

Professor: KESTER.*Associate Professor:* RICE (M. E.).*Assistant Professors:* STIMPSON, SMITH (T. T.).*Instructor:* WHITEMORE.

1E.—GENERAL PHYSICS. Five hours credit. First semester, four recitations at 11:30; two hours laboratory at assigned periods; second semester, four recitations at 10:30, two hours laboratory at assigned periods. A fundamental course of experimental lectures, recitations, and problems. Prerequisites, plane trigonometry and some knowledge of analytical geometry and calculus. First semester, F. E. Kester and other instructors; second semester, E. F. Stimpson and other instructors.

2E.—GENERAL PHYSICS. Five hours credit. Second semester, four recitations, at 11:30, two hours laboratory at assigned periods; first semester, four recitations, at 10:30, two hours laboratory at assigned periods. A continuation of course 1E. Second semester, F. E. Kester and other instructors; first semester, E. F. Stimpson and other instructors.

52.—THEORY OF ELECTRICITY AND MAGNETISM. Three hours credit. First semester, M. W. F., at 8:30. M. E. Rice.

56E-I.—ELECTRICAL MEASUREMENTS I. One and one-half hours credit. First semester, three hours per week. M. Tu. of alternate weeks, 1:30 to 4:30. A laboratory course coördinate with 52. M. E. Rice.

56E-II.—ELECTRICAL MEASUREMENTS II. One and one-half hours credit. Second semester, three hours; M. Tu. of alternate weeks, at 1:30 to 4:30. Continuation of course 56E-I. M. E. Rice.

For other courses in physics, see The College and The Graduate School.

ROMANCE LANGUAGES.

Instructors: GARDNER,* HOFFMANN, SABY, GUTIÉRREZ, MOLINA.

FRENCH.

1.—ELEMENTARY FRENCH I. Five hours credit. First semester, at 10:30. Grammar (Fraser and Squair), and easy reading. Drill in pronunciation, accidence, and easy syntax. Gardner, Hoffmann.

* Absent on leave, 1916-'17.

2.—ELEMENTARY FRENCH II. Five hours credit. Second semester, at 10:30. A continuation of course 1. Reading of simple prose texts, with exercises in dictation and elementary composition.

Gardner, Hoffmann.

(Instead of taking course 3, engineering students should take course 5. Those wishing course 4 may take it either semester in the College.)

5.—SCIENTIFIC FRENCH. Three hours credit. First semester, at 11:30. Translation of some scientific text. Reading and reports of current French scientific and technical periodicals. The aim of this course is to give the students a reading knowledge of the French language of science for practical use in research work. Prerequisites, courses 1 and 2.

Gardner, Hoffmann.

SPANISH.

21.—ELEMENTARY SPANISH I. Five hours credit. First semester, five hours, 8:30, 9:30, 1:30; also second semester, five hours, at 1:30. An outline of grammar (Espinosa and Allen). Reading of short stories. Elementary composition.

Gardner, Saby, Gutiérrez, Molina.

22.—ELEMENTARY SPANISH II. Five hours credit. Second semester, five hours, 9:30 or 1:30. Grammar and composition. Reading of easy modern proze. Carrión-Aza, Pérez Galdós, Ibáñez, etc.

Gardner, Saby, Gutiérrez, Molina.

For advanced courses in Spanish, see The College.

TECHNICAL REPORTS AND THESES.

Special written reports are required from each student at certain times during his course of study, generally one in each semester of the Sophomore year, one in the Junior year, and one in the Senior year. A student enrolled for technical report I, II, III, or IV confers with his instructor for assignment of the subject on or before October 15 for the first semester, and on or before March 15 for the second semester. The finished reports must be in the instructors' hands by January 15 and May 15 of the respective semesters. Each report counts for one-half credit.

A special thesis is required of each student before his graduation. (See "Thesis" in the description of courses of the professional departments.)

Standard forms for the make-up of technical reports, theses, and other written papers are specified in an official circular to be had at the Dean's office.

SUMMER WORK.

In several of the courses of study practical work in one or two summers is required. This work is not measured in terms of credit hours, although in fixing the requirements for graduation one or two additional credit hours are required in those courses of study which do not include summer work.

INSPECTION TRIPS.

As a valuable adjunct to resident study at the University, inspection trips to various engineering works are required to be taken by students with their instructors. Such trips may be made to large machine shops, power plants, steam or electric railways, lighting systems, city water-works, sewerage systems, industrial chemical plants, cement works, mining plants, or smelters. Architectural-engineering students are expected to visit important buildings in course of construction. These trips may be made during regular sessions of the school or during vacation. Parties sometimes travel as far as Chicago or St. Louis. The trips requiring absence from other work and those of considerable expense are indicated in the programs of required courses of study.

ENGINEERING EXPERIMENT STATION.

STATION STAFF.

FRANK STRONG, Ph. D., President.
P. F. WALKER, M. M. E. (Director), Mechanical Engineering.
GEORGE C. SHAAD, E. E., Electrical Engineering.
HERBERT A. RICE, C. E., Mechanics and Civil Engineering.
GOLDWIN GOLDSMITH, Ph. B., Architectural Engineering.
A. C. TERRILL, E. M., Mining Engineering.
W. A. WHITAKER, A. M., Chemical Engineering.

PURPOSES.

This department of University activity has been established for two reasons: first, to correlate and group together in a more systematic way the results of scientific investigation that heretofore has been done under the various departments; second, to foster, enlarge, and direct this work, especially along lines of value to this state, and to supervise the publication and distribution of the results of engineering and industrial research work.

The work completed and published up to the present time has been done mainly by members of the teaching staff. It is described in detail in Section XII of the complete Catalog. Lists of all publications and of those soon to be issued are given. All communications relative to the Station and its work should be addressed to the Director.

SECTION V.
School of Fine Arts.

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FACULTY.

FRANK STRONG, Ph. D., Chancellor of the University, and President of the Faculties.

HAROLD L. BUTLER, A. B., Dean of the School of Fine Arts, and Professor of Voice.

CHARLES G. DUNLAP, Litt. D., Professor of English Literature.

CARL A. PREYER, Mus. D., Associate Dean of the School of Fine Arts, and Professor of Piano and Composition.

EDWIN M. HOPKINS, Ph. D., Professor of Rhetoric and English Language.

WILLIAM A. GRIFFITH, Professor of Drawing and Painting.

EUGENIE GALLOO, A. M., Professor of Romance Languages and Literatures.

CHARLES S. SKILTON, A. B., Professor of Organ, History of Music, and Theory.

JAMES NAISMITH, M. D., Professor of Physical Education.

FREDERICK E. KESTER, Ph. D., Professor of Physics.

ELMER F. ENGLE, A. M., Professor of German.

WILLIAM B. DOWNING, Professor of Voice.

RAPHAEL D. O'LEARY, A. B., Professor of Rhetoric.

WORT S. MORSE, B. S., Professor of Violin.

ARTHUR NEVIN, Professor of Choral Music, Ensemble, and Music Extension.

WILLIAM M. HEKKING, B. P., Professor of Drawing and Painting.

SELDON L. WHITCOMB, A. M., Associate Professor of English Literature.

LOUIS E. SISSON, A. M., Associate Professor of Rhetoric.

ALBERTA L. CORBIN, Ph. D., Associate Professor of German.

WILLIAM S. JOHNSON, Ph. D., Associate Professor of English Literature.

ELISE NEUENSCHWANDER, Ph. D., Associate Professor of French.

JOSEPH A. FARRELL, Associate Professor of Voice.

HARRIET GREISSINGER, Mus. B., Assistant Professor of Piano.

FREDERICK A. G. COWPER, A. M., Assistant Professor of Italian.

ANNA SWEENEY, Mus. B., Assistant Professor of Piano.

MARIA L. BENSON, A. B., Instructor in Design.

J. C. MCCANLES, Instructor in Band Instruments.

MAUD MILLER, Mus. B., Instructor in Piano.

PEARL A. EMLEY, Mus. M., Instructor in Piano and Organ.

CORA I. REYNOLDS, Mus. B., Instructor in Voice.

EVELYN F. OLCOTT, Instructor in Voice.

WILLIAM B. DALTON, Instructor in Cello.

School of Fine Arts.

DEPARTMENTS.

The School of Fine Arts is made up of the following departments:
(1) Music; (2) Drawing and Painting.

EQUIPMENT.

IN MUSIC. The department of music of the University occupies North College. The school is well equipped with pianos. It has a three-manual pipe organ; a piano with organ pedals; charts for sight-reading, and a Victrola with several hundred music records.

IN DRAWING AND PAINTING. The department of drawing and painting occupies specially constructed rooms in the new Administration Building. There are six large, top-lighted studios. The department is well equipped with objects used in teaching drawing and design, together with a large library.

THE LIBRARY. The University Library contains a large collection of works on art, including art exposition and criticism; full sets of the classic and modern dramatic works, with many books on dramatic art and criticism; a large collection of vocal and orchestral scores of operas, oratorios and cantatas, biography, music history and criticism, symphonies and overtures, chamber music, ensemble music, pianoforte and organ music. These collections are annually increased. In addition each department has its departmental library.

THE FACULTY.

The professional faculty of the School of Fine Arts is made up of instructors who have had the advantage of the finest training to be secured in this country, and, in addition, many of them have had extended European training. Each one has had a large experience before the public—in concert, opera, oratorio, in dramatic work—and is able to give practical advice to his students in these matters. No instructor with less than five years' teaching experience is engaged for the faculty, so students may be sure that they are in the hands of thoroughly experienced teachers. Many members of the faculty are authors, composers, and artists of rank and merit, their works having been issued by representative publishing houses. Each instructor is a specialist in his particular work, and represents the best thought and method of modern pedagogy along that line.

CURRICULA.

Curricula Leading to Degrees.

The curricula in the School of Fine Arts leading to degrees are as follows:

Four-year courses in piano, voice, violin, organ, and composition, leading to the degree bachelor of music.

A four-year course in drawing and painting, leading to the degree bachelor of painting.

All candidates for a degree must spend the last two years in residence at the University. Students who are behind in their major study at the end of the second year will become special students until the work is made up.

Curricula Leading to an Artist's Certificate.

There are also four-year curricula in voice, piano, organ, violin, and drawing and painting, leading to an artist's certificate in these subjects.

These curricula are designed to accommodate those students who are unable to meet the scholastic requirements of the regular courses in piano, voice, violin, organ, or drawing and painting; or those who do not wish to carry the studies in the College which are required of students in the regular courses; or those who wish to specialize with the idea of fitting themselves as teachers of the various subjects.

There are no entrance requirements except the requirements in music, which are the same as for the regular courses. The courses are the same as for the four years of the regular course, omitting the studies in the College.

Curricula Leading to a Teacher's Certificate.

Three-year curricula in voice, piano, organ, violin, and drawing and painting, lead to a teacher's certificate in these subjects.

A two-year curriculum in public-school music leads to a teacher's certificate in public-school music.

A two-year curriculum in public-school drawing and painting leads to a certificate in public-school drawing and painting.

The three-year curricula are the same as the first three years of the artists' certificate curricula, with the same entrance requirements, and with the same studies. They are designed to accommodate those who are able to spend but three years at the school.

The two-year Teachers' Certificate Curricula are designed to fit students as teachers of music, and drawing and painting in the grades and high schools of the state. The requirements for entrance are the same as for the College, viz.: fifteen units of high-school work.

Upon the completion of these courses the State Board of Education will issue a special state certificate entitling the holder thereof to teach music or drawing and painting in any of the grade or high schools of the state.

ADMISSION.

There are two methods of admission to the School of Fine Arts: First, by examination; second, by certificate.

1. By Examination.

All students who can not present certificates from accredited high schools will be examined in the subjects required for entrance. The times and place of examination are set forth in the General Information section.

2. By Certificate.

Students will be admitted without examination on certificates from accredited high schools, or other preparatory schools, signed by the proper school officer.

Units Required for Admission.

For admission to the four-year courses leading to degrees in drawing and painting, and in voice, the requirements are the same as for admission to the College, viz.: fifteen units of high-school work.

For admission to the courses in violin and in piano and organ, twelve units of high-school work are required, and should consist of:

Three units of English.

Two and one-half units in mathematics.

Three units in foreign language.

One unit in physical science.

Two and one-half optional units.

IN PIANO AND ORGAN. The following courses, intended to parallel the four years of high-school study, must be completed before admission to the Freshman year. Students who have nearly completed the course will be admitted with condition on recommendation of the head of the department. An examination in fourth-year work is required. While the School of Fine Arts prefers this course of study, students who have been prepared with Lambert's or Mathews' Graded Studies, Mason's Touch and Technic, or other recognized methods, may offer them as a substitute.

FIRST YEAR—**STUDIES.**

Koehler, Op. 157.
Duvernoy, Op. 176.
Loeschhorn, Op. 65, Book 2, or
Op. 84, Book 2.
Friml, Etudes Poetiques, Book I.
Mentor Crosse, Technic, Vol. I.
Burgmueller, Op. 100.
Concone, Op. 24.

PIECES.

Selections from "The Pianist," first and second years, and duets by Ellsworth, Dutton, Watson, Crosby Adams, Aldrich, Vincent, Gaynor, etc.

SECOND YEAR—

Heller, Op. 47.
Stamaty, Op. 37.
Lemoine, Op. 37.
Friml, Etudes Poetiques, Book II.
Loeschhorn, Op. 65, Book 3.
Mentor Crosse, Vol. 2.
Preyer, Ten Easy Wrist Studies.
Krause, Op. 2.

Selections from "The Pianist," first and second years. Duets and pieces by Newton Swift, Reinecke, Von Wilm, Gade, Friml, Kullak; MacDougall, Studies in Melody Playing.

THIRD YEAR—

Loeschhorn, Op. 66, Book I.
Perry, Wrist Studies.
LeCouppey, Op. 17.
Heller, Op. 46.
Mentor Crosse, Vol. 3.
Biehl, Op. 152.
Preyer, Op. 44, Book I.

Selections from "The Pianist," second and third years. Pieces and duets by Friml, Merkel, Rogers; Sonatinas, Steingraeber Edition, No. 190; Schytte.

FOURTH YEAR—

Czerny, Op. 299.
Loeschhorn, Op. 66, Books 2 and 3.
Gaynor, Pedal Studies.
Preyer, Op. 44, Book 2.
Preyer, Twelve Wrist Studies.
Bach, Easy Preludes.
Landon, Two notes against Three.
Lynes, Op. 21.

Pieces by Lack, Rogers, Nevin, Meyer-Helmund; Grieg, Lyrical Pieces, Op. 12; Sonatas—Haydn, C Major; Mozart, C Major; Mozart, G Major.

IN VIOLIN.**FIRST YEAR—****STUDIES.**

Schubert's Violin Method, Books 1 and 2.
Sevcik, School of Violin Technic, Op. 1, Part 1.

PIECES.

Jul. Weiss, Harvest of Flowers, Books 1 and 2.
Philip Mittell, Twenty-nine Pieces, Vol 1.
Pleyel, Duets, Op. 8.
Goby Eberhardt, School of Melody, Book 1.

SECOND YEAR—

Schubert's Violin Method, Books 2 and 3.
Sevcik, School of Violin Technic, Op. 1, Part 1, continued.
Sevcik, Shifting the Position, Op. 8.
Kayser, Studies, Book 2.

Goby Eberhardt, School of Melody, Book 2.
Twelve Little Duets, Mazas.
Easy Solos employing the first five positions, by Dancla, DeBeriot, Wieniawski, Bohm, Hauser, Reis and others.

THIRD AND FOURTH YEARS—

Kayser, Studies, Book 3.
Sevcik, Shifting the Position, Op. 8.
Sevcik, Exercises in Double Stopping, Op. 9.
Schradeck, Scale Studies.

Dancla, Six Airs, Op. 118.
Dancla, Three Little Symphonies, for two violins and piano.
Sonatas by Dancla, Wohlfahrt and others.
Concertos by Seitz, Accolay and others.
Solos employing the first seven positions, by Dancla, Bohm, Haesche, Pierne and others.

Other violin methods may be substituted for the Schubert, according to the teacher's experience.

Owing to the fact that students are generally out of practice during the summer, entrance examinations in the above work can be taken any time up to October 1. Students intending to enter should write the Dean of the School of Fine Arts about September 1, signifying such intention and arranging for interviews with the heads of the various departments.

For details of these courses see the Curriculum in this section.

For courses leading to the degree master of music see Section II, The Graduate School.

Special Students.

All persons who desire to pursue a special line of work, without conforming to the requirements for entrance or following a prescribed course, may apply for admission as special students to the Dean of the School of Fine Arts. The Dean's certificate of acceptance must be presented to the Registrar before registration.

Special students desiring credit toward a degree or a certificate are subject to the same regulations as regular students as to the quality of work, attendance at recitals and examinations. Nonresident special students who are not regularly enrolled in some other school of the University will be expected to carry not less than ten hours' work, of which, in the case of music students, there must be two hours of theory.

REGISTRATION.

All candidates for admission having certificates from accredited schools, and all students of the University intending to pursue their studies during the ensuing year must present themselves for registration at the University on September 17, 18, or 19. *Registration at a later date will be permitted only on the payment of a fee of one dollar.*

ENROLLMENT.

After registration has been completed with the Registrar and after fees have been paid, students should apply to the Dean for enrollment in their classes. Enrollment the first semesters occurs September 18 and 19, and on the first day of the second semester. *Enrollment at a later date will be permitted only on the payment of a fee of one dollar.*

SPECIAL COURSES.

Ensemble.

Ensemble classes meet throughout the four years of the course for the study of concerted music. The first year four- and eight-hand music is studied in the piano course; in the violin and vocal courses duos and trios are studied; the second year the study of accompanying is taken up; and in the third and fourth years string trios, quartets, and quintets are studied. Ensemble playing and singing is one of the features of the student and faculty concerts. Two years of ensemble is required of all instrumental students who are candidates for a degree.

Teaching Materials—Piano, Violin.

These courses are designed to aid piano and violin students in grasping the principles and methods of teaching these instruments. A thorough review of the materials—exercises, studies, and pieces—used in a thorough and well-graded course for these instruments, together with the best and most modern methods of presenting these materials to pupils of all ages. Actual practice in teaching is gained by teaching beginning and intermediate pupils under the guidance of instructors.

Music History.

The Fine Arts course in Music History occupies one hour for the Sophomore year and two hours for the Junior year. One of the features of the course is the great mass of illustrative material used, by which the student hears the music performed and has ample opportunity of studying it from the tonal standpoint.

Ear Training and Dictation.

This is a course most necessary for the full development of the modern music student. It is required of all Freshman students in the regular courses. Advanced students are advised to repeat it until proficient.

Melodic and rhythmic dictation within the key; triads in all positions; triads in key relations, major and minor; dominant sept chord; two-part melodic dictation; simple modulations to the sept chords; chromatic and passing tones; chords.

GENERAL.

Concerts and Recitals.

The University supports a course of eight concerts by artists of the highest rank. All fine arts music students are admitted to these concerts free of charge. The concert course for this year consists of the following attractions: Giovanni Martinelli, tenor; Axel Skovgaard, violinist; Cecil Fanning, baritone; Fanny Bloomfield-Zeisler, pianist; Tilly Koenen, contralto; Shostac String Quartet, and two concerts by the Minneapolis Symphony Orchestra.

Concerts are frequently given in Recital Hall and in University Hall by the Faculty and advanced students.

Recitals are given weekly by the students of the school, at which works studied in the classroom are performed before a small audience of fellow students and friends. Every music student is required to attend these recitals and all concerts, to take part in the programs at least twice a year, and to present each semester a record of attendance. These semipublic appearances are of great assistance in enabling the student to acquire the ease and self-possession so essential to a successful public performance.

Art Exhibitions.

Semiannual exhibitions of works of art are held at the University, together with a course of lectures upon subjects related to the fine arts. At the close of the year there is held an exhibition of work done by pupils of the department of drawing and painting.

Choral Union.

The Choral Union, a chorus of 200 voices, Professor Arthur Nevin, conductor, is supported wholly by the University, although many townspeople are members. Only the finest choral works are studied, and two concerts are given annually. Weekly rehearsals are held in the high-school auditorium. During the four years of the College course thorough knowledge of at least eight great choral works is gained. In addition, the Choral Club rehearses and performs a number of fine miscellaneous choruses.

University Orchestra.

The University supports an orchestra, made up of students and amateur musicians from the city. Weekly rehearsals are held and an annual concert given. The orchestra is also used in the performance of concertos for the various solo instruments.

University Band.

The University Band of 70 pieces is made up wholly of University students. It rehearses weekly and gives two annual concerts.

Glee Clubs.

A Men's Glee Club and a Women's Glee Club conducted by the Director of the vocal department give opportunity for the study and performance of the standard and lighter compositions for men's and women's voices. Each club gives an annual concert, and the Men's Glee Club makes a trip during the holidays.

Scholarships.

GOVERNOR ARTHUR CAPPER has given a scholarship in the sum of \$50. It is open to Freshman students in the School of Fine Arts. Held in 1916-'17 by Miss Leta Ellison.

MRS. A. C. STICH, of Independence, has given a scholarship in the sum of \$50. It is open to Freshman students in the School of Fine Arts. Held in 1916-'17 by Adrian Pouliot.

Pianos for Practice.

This school does not furnish pianos for practice at the building, except a piano with organ pedals, but instruments can be rented in town for from three to five dollars a month, and grand pianofortes at from seven to ten dollars a month. Pianos rented of private persons, or in connection with board, may often be secured at even lower rates. Several students sometimes unite in renting an instrument, thus materially reducing the expense.

EXPENSES.

By legislative enactment, a matriculation fee of five dollars (to be paid but once) must be charged each student of Kansas entering any of the regular courses of the School of Fine Arts. Nonresidents of Kansas must pay a matriculation fee of ten dollars. This matriculation fee is not charged students who enter as special students only.

The instructors in the School of Fine Arts receive compensation from the state for only part of the work of the courses, and the remainder must be paid for at rates indicated below.

No fees will be refunded if the student leaves before the end of a half-term. No lessons are given during the week of the semiannual examinations.

The following rates are for the quarter, and with the exception of the work in the public-school music, drawing and painting, are based on two half-hour private lessons a week in the major study, together with class work in harmony, music history, technic, sight singing and ear training, and all studies in the College or the School of Education.

All bills are payable quarterly in advance, and enrollment in classes will be permitted only upon the presentation of the treasurer's receipt for the quarter's tuition.

Rates for Regular Students.

First year....	Piano, per quarter, lessons with assistants.....	\$27.50
	Voice, per quarter, lessons with Miss Reynolds or Mrs. Olcott	27.50
	Voice, per quarter, with other teachers.....	33.50
	Violin, per quarter	27.50
	Drawing and painting, per quarter.....	15.00
	Public-school music in class	15.00
	(Private lessons are subject to fees.)	

Second year... Rates the same as for the first year.

Third year....Piano, per quarter:

Artists' course (two lessons with Prof. Preyer),	\$40.00
Collegiate course (one with Prof. Preyer and one with an assistant)	33.50
Organ, per quarter	33.50
Voice, per quarter	33.50
Violin, per quarter	33.50
Painting, per quarter	15.00

Fourth year.. All courses leading to degrees, free to Kansas students.
To receive free tuition in the fourth year students must
be of full Senior rank in all required subjects.
For nonresidents the same as for the third year.
For all certificate courses the same as for the third year.

'Rates for Special Students.

The following rates are for the quarter, and cover only the subjects given:

Piano with Prof. Preyer, two a week.....	\$36.00
Piano with Prof. Preyer, one a week.....	20.00
Piano with Miss Greissinger, Miss Sweeney, or Miss Emley, two a week	21.00
Piano with Miss Greissinger, Miss Sweeney, or Miss Emley, one a week	11.00
Piano with Miss Miller, two a week.....	17.00
Piano with Miss Miller, one a week.....	9.00
Voice with Dean Butler, Prof. Downing, or Prof. Farrell, two a week	36.00
Voice with Dean Butler, Prof. Downing, or Prof. Farrell, one a week	20.00
Voice with Mrs. Olcott, two a week.....	21.00
Voice with Mrs. Olcott, one a week.....	11.00
Voice with Miss Reynolds, two a week.....	19.00
Voice with Miss Reynolds, one a week	10.00
Organ with Prof. Skilton, two a week.....	36.00
Organ with Prof. Skilton, one a week.....	20.00
Organ with Miss Emley, two a week.....	21.00
Organ with Miss Emley, one a week.....	11.00
Violin with Prof. Morse, two a week.....	30.00
Violin with Prof. Morse, one a week.....	17.50
Harmony counterpoint, composition, in class, two a week.....	10.00
Harmony, counterpoint, composition, instrumentation, with Pro- fessor Skilton, two a week, privately.....	36.00
Harmony, counterpoint, composition, instrumentation, with Pro- fessor Skilton, one a week, privately.....	20.00
Sight singing, ear training and dictation, two a week in class....	5.00
Ensemble in class	3.00
Technic, in class	5.00
Public-school music courses in class.....	15.00
(Private lessons subject to special fees.)	
Teaching materials, piano (with practice teaching).....	3.00
Teaching materials, violin (with practice teaching).....	5.00
Violin in class for public-school music students.....	4.00
Rent of violin, bow and case.....	1.50
Drawing and painting, in class.....	15.00
Drawing and painting, in class (part time).....	7.50
Public-school drawing and painting, in class.....	15.00
Design, in class	15.00
Design, in class (part time).....	7.50

THE CURRICULUM.

In September, 1916, all courses of study in the School of Fine Arts were put on the basis of 120 semester hours. Students entering the school, then or thereafter, must, before graduation, present credits in all *required* subjects and enough additional credits in *optional* subjects to make up the sum of 120 semester hours. Other *optional* subjects than those given in the following curriculum may be offered for credit, by arrangement with the Dean.

PIANOFORTE.

Leading to the degree of Bachelor of Music.

ARTISTS' COURSE—COLLEGIATE COURSE.

These courses are identical in outline, but students in the artists' course are expected to do a larger amount of work, to maintain the highest grade in all musical subjects, and give a graduating recital. This is not required in the collegiate course, which is intended for those who wish to fit themselves as teachers or to study music for personal culture rather than to become public performers. After the second year students are graded in the two courses according to their standing. During the first two years piano students take their lessons from an assistant. Exceptions are sometimes made when students are willing to pay the Junior tuition rate, and Professor Preyer has time to accommodate them. In the third and fourth years students in the artists' course receive two lessons a week of Professor Preyer; students in the collegiate course receive one lesson of Professor Preyer and one of an assistant.

FRESHMAN YEAR.

First Semester:

Piano 1, twice a week, by appointment. Assistants. (Five hours.)
 Technic (Piano 9), once a week, by appointment. Miller. (One hour.)
 Ear Training and Sight Singing 1, Tu. Th., at 1:30. Downing. (One hour.)
 Harmony (Musical Theory 1), Tu. Th., at 2. Sweeney. (Two hours.)
 Rhetoric 1. (Three hours.)
 Physical Education 1, twice a week, by appointment.
 Recitals 1. (One hour.)
 Ensemble Playing 1. (One hour.)

Second Semester:

Piano 2, twice a week, by appointment. Assistants. (Five hours.)
 Technic (Piano 10), W. at 3. Miller. (One hour.)
 Ear Training and Sight Singing 2, Tu. Th., at 1:30. Downing. (One hour.)
 Harmony (Musical Theory 2), Tu. Th., at 2. Sweeney. (Two hours.)
 Harmony (Musical Theory 1), M. W. F., at 2. Skilton. (Two hours.)
 Rhetoric 2, two hours a week. (Two hours.)
 Physical Education 2, twice a week, by appointment.
 Recitals 2. (One hour.)
 Ensemble Playing 2. (One hour.)

SOPHOMORE YEAR.

First Semester:

- Piano 3, twice a week, by appointment. Assistants. (Five hours.)
 Technic (Piano 11), once a week, by appointment. Miller. (One hour.)
 Harmony (Musical Theory 3), Tu. F., at 3. Skilton. (Two hours.)
 Harmony (Musical Theory 2 and 3), M. W. F., at 2. Skilton. (Two hours.)
 English 10, two hours a week. (Two hours.)
 History of Music, Th., at 4. Skilton. (One hour.)
 Recitals 3. (One hour.)
 Ensemble Playing 3. (One hour.)
 Any of the following optionals may be taken (private lessons are subject to fees):
 Vocal Culture 1, by appointment. (One and one-half or three hours.)
 Free-hand Drawing. (Three hours.)
 German 1, daily. (Five hours.)
 French 1, daily. (Five hours.)
 Italian 1, three hours. (Three hours.)
 Spanish 1, five hours. (Five hours.)

Second Semester:

- Piano 4, twice a week, by appointment. Assistants. (Five hours.)
 Technic (Piano 12), once a week, by appointment. Miller. (One hour.)
 Harmony (Musical Theory 4), Tu. F., at 3. Skilton. (Two hours.)
 English 11, three hours a week. (Three hours.)
 History of Music, Th., at 4. Skilton. (One hour.)
 Recitals 4. (One hour.)
 Ensemble Playing 4. (One hour.)
 Any of the following optionals may be taken (private lessons are subject to fees):
 Vocal Culture 1, by appointment. (One and one-half or three hours.)
 Free-hand Drawing. (Three hours.)
 German 2, daily. (Five hours.)
 French 2, daily. (Five hours.)
 Italian 2, three hours. (Three hours.)
 Spanish 2, five hours. (Five hours.)
 Teaching Materials, once a week, by appointment. Greissinger. (One hour.)

JUNIOR YEAR.

First Semester:

- Piano 5, twice a week, by appointment. Preyer. (Six hours.)
 Counterpoint (Musical Theory 5), Mo., at 3. Skilton. (One hour.)
 Composition (Musical Theory 7), Th., at 3. Skilton. (One hour.)
 History of Music, Tu. Th. Skilton. (Two hours.)
 English 12 *a* and *b*. History of English Literature. (Two or three hours.)
 Recitals 5. (One hour.)
 Ensemble Playing 5. (One hour.)
 Any of the following optionals may be taken (private lessons are subject to fees):
 Vocal Culture, by appointment. (One and one-half or three hours.)
 Drawing and painting. (Three hours.)
 German 1 or 3, daily. (Five hours.)
 French 1 or 3, daily. (Five hours.)
 Italian and Spanish as in Sophomore year.

Second Semester:

- Piano 6, twice a week, by appointment. Preyer. (Six hours.)
 History of Music, Tu. Th. Skilton. (Two hours.)
 Counterpoint (Musical Theory 6), M., at 3. Skilton. (One hour.)
 Composition (Musical Theory 8), Th., at 3. Skilton. (One hour.)
 English 13 *a* and *b*. History of English Literature. (Two or three hours.)
 Acoustics, M. W., at 4:30, third half-term. (One hour.)
 Recitals 6. (One hour.)
 Ensemble Playing 6. (One hour.)
 Thesis 1. Skilton. One hour.)
 Any of the following optionals may be taken (private lessons are subject to fees):
 Vocal Culture, by appointment. (One and one-half or three hours.)
 Drawing and painting. (Three hours.)
 German 2 or 4, daily. (Five hours.)
 French 2 or 4, daily. (Five hours.)
 Italian and Spanish as in Sophomore year.
 Teaching Materials, once a week, by appointment. (One hour.)

SENIOR YEAR.

First Semester:

- Piano 7, twice a week, by appointment. Preyer. (Seven hours.)
 Canon and Fugue (Musical Theory 11), once a week, by appointment.
 Preyer. (One hour.)
 Recitals 7. (One hour.)
 Ensemble Playing 7. (One hour.)
 Thesis 2. Skilton. (One hour.)
 Optional, English 50, 76, and 78. Other optionals as in previous years.
 Composition (Musical Theory 9), once a week, by appointment.
 Preyer. (One hour.)

Second Semester:

- Piano 8, twice a week, by appointment. Preyer. (Eight hours.)
 Instrumentation (Musical Theory 12), once a week, W., at 3. Skilton.
 (One hour.)
 Thesis 3. Skilton. (One hour.)
 Recitals 8. (One hour.)
 Ensemble Playing 8. (One hour.)
 Optional, English 77, 78, and 87. Other optionals as in previous years.
 Composition (Musical Theory 10), once a week, by appointment.
 Preyer. (One hour.)
 Teaching Materials, once a week, by appointment. (One hour.)

 ORGAN.

Leading to the degree of Bachelor of Music.

Three-year course, open to those who have completed the work of the Freshman year in piano.

SOPHOMORE YEAR.

First Semester:

- Organ 1, once a week, by appointment. Skilton. (Five hours.)
 Piano 3, once a week, by appointment. Assistant. (Two hours.)
 Technic (Piano 11), once a week, by appointment. Miller. (One hour.)
 Harmony (Musical Theory 3), Tu. F., at 3. Skilton. (Two hours.)
 English 10, two hours a week. (Two hours.)
 History of Music, Th., at 4. Skilton. (One hour.)
 Recitals 3. (One hour.)

Ensemble Playing 3. (One hour.)

Any of the following optionals may be taken (private lessons are subject to fees):

Vocal Culture, by appointment. (One and one-half or three hours.)

Free-hand Drawing. Griffith. (Three hours.)

German 1, daily. (Five hours.)

French 1, daily. (Five hours.)

Italian 1, three hours. (Three hours.)

Spanish 1. (Five hours.)

Second Semester:

Organ 2, once a week, by appointment. Skilton. (Five hours.)

Piano 4, once a week, by appointment. Assistant. (Two hours.)

Technic (Piano 12), once a week, by appointment. Miller. (One hour.)

Harmony (Musical Theory 4), Tu. F., at 3. Skilton. (Two hours.)

English 11, three hours a week. (Three hours.)

History of Music, Th., at 4. Skilton. (One hour.)

Recitals 4. (One hour.)

Ensemble Playing 4 (One hour.)

Any of the following optionals may be taken (private lessons are subject to fees):

Vocal Culture, by appointment. (One and one-half or three hours.)

Free-hand Drawing. Griffith.

German 2, daily. (Five hours.)

French 2. (Five hours.)

Italian 2. (Three hours.)

Spanish 2. (Five hours.)

JUNIOR YEAR.

First Semester:

Organ 3, twice a week, by appointment. Skilton. (Five hours.)

Counterpoint (Musical Theory 5), M., at 3. Preyer. (One hour.)

Composition (Musical Theory 7), Th., at 3. Skilton. (One hour.)

Organ 8, once a week, by appointment. Skilton. (One hour.)

History of Music, Tu. and Th. Skilton. (Two hours.)

English 12 a and b. History of English Literature. (Two or three hours.)

Recitals 5. (One hour.)

Ensemble Playing 5. (One hour.)

Any of the following optionals may be taken (private lessons are subject to fees):

Vocal Culture 1 or 2, by appointment. (One and one-half or three hours.)

German 1 or 3 daily. (Five hours.)

French 1 or 3, daily. (Five hours.)

Italian and Spanish as in Sophomore year.

Drawing and Painting 1 or 2. (Three hours.)

Second Semester:

Organ 4, twice a week, by appointment. Skilton. (Five hours.)

Composition (Musical Theory 8), Th., at 3. Skilton. (One hour.)

Counterpoint (Musical Theory 6), M., at 3. Preyer. (One hour.)

Organ 9, once a week, by appointment. Skilton. (One hour.)

English 13 a and b. History of English Literature. (Two or three hours.)

Acoustics, M. W., at 5:30, second half-term. (One hour.)

History of Music, T. Th. Skilton. (Two hours.)

Recitals 6. (One hour.)

Ensemble Playing 6. (One hour.)

Thesis 1. Skilton. (One hour.)

Any of the following optionals may be taken (private lessons are subject to fees):

Vocal Culture 1 or 2, by appointment. (One and one-half or three hours.)

Drawing and Painting. (Three hours.)

German 2 or 4, daily. (Five hours.)

French 2 or 4, daily. (Five hours.)

Italian and Spanish as in Sophomore year.

SENIOR YEAR.

First Semester:

Organ 5, twice a week, by appointment. Skilton. (Six hours.)

Canon and Fugue (Musical Theory 11), W. (One hour.)

Church Music 7, once a week. Skilton. (One hour.)

Recitals 7. (One hour.)

Ensemble Playing 7. (One hour.)

Thesis 2. Skilton. (One hour.)

Optionals, English 50, 76, and 78. Other optionals as in previous years.

Composition (Musical Theory 9), once a week, by appointment.

Preyer. (One hour.)

Second Semester:

Organ 6, twice a week, by appointment. Skilton. (Eight hours.)

Instrumentation (Musical Theory 12), W., at 3. Skilton. (One hour.)

Recitals 8. (One hour.)

Ensemble Playing 8. (One hour.)

Thesis 3. Skilton. (One hour.)

Optionals, English 77, 78, and 87. Other optionals as in previous years.

Composition (Musical Theory 10), once a week, by appointment.

Preyer. (One hour.)

VIOLIN.

Leading to the degree of Bachelor of Music.

These courses are the same as the four-year course in piano, except that violin 1 to 8 take the place of piano 1 to 8, and orchestra 1 to 8 that of piano 9 to 12. Students must be able to play easy piano accompaniments or make up the deficiency by private lessons.

Violin students are required to play in the University Orchestra during their entire course, unless excused by the Dean on recommendation of the instructor.

VIOLONCELLO.

These courses are the same as the first two years of the course in piano, except that violoncello 1 to 4 take the place of piano 1 to 4, and orchestra 1 to 4 that of piano 9 to 12. Students must be able to play easy piano accompaniments or make up the deficiency by private lessons.

Violoncello students are required to play in the University Orchestra during their entire course, unless excused by the Dean on recommendation of the instructor.

VOCAL CULTURE.

Leading to the degree of Bachelor of Music.

Students in the regular course in voice must be able to play accompaniments of moderate difficulty. Any deficiency in this respect must be made up by private lessons before entering the Senior year.

Voice students take their lessons with Dean Butler, Professor Downing, Professor Farrell or Mrs. Olcott; also in the Freshman year with Miss Reynolds.

Voice students are urged to take French 1 and 2 in the Junior or Senior year.

FRESHMAN YEAR.

First Semester:

Vocal Culture 1, twice a week, by appointment. Butler, Downing, Farrell, Olcott, or Reynolds. (Three hours.)

Ear Training and Sight Singing 1, Tu. Th., at 1:30. Downing. (One hour.)

Harmony (Music Theory 1), Tu. Th., at 2. Skilton. (Two hours.)

Rhetoric 1, three hours a week. (Three hours.)

Italian 1, three hours a week. (Three hours.)

Physical Education 1, twice a week.

Recitals 1. (One hour.)

Chorus Singing 1. (One hour.)

Second Semester:

Vocal Culture 2, twice a week, by appointment. Butler, Downing, Farrell, Olcott or Reynolds. (Three hours.)

Ear Training and Sight Singing 2, Tu. Th., at 1:30. Downing. (One hour.)

Harmony (Musical Theory 2), Tu. Th., at 2. Skilton. (Two hours.)

Harmony (Musical Theory 1), M. W. F., at 2. Skilton. (Two hours.)

Rhetoric 2, two hours a week. (Three hours.)

Physical Education 2, twice a week.

Recitals 2. (One hour.)

Chorus Singing 2. (One hour.)

Italian 2, three hours a week. (Three hours.)

SOPHOMORE YEAR.

First Semester:

Vocal Culture 3, twice a week, by appointment. Butler, Downing, Farrell, or Olcott. (Three hours.)

Harmony (Musical Theory 3), Tu. F., at 3. Skilton. (Two hours.)

English 10, two hours a week. (Two hours.)

History of Music, Th., at 4. Skilton. (One hour.)

Recitals 3. (One hour.)

German 1, (Fine Arts) M. W. F., at 8:30. (Three hours.)

Any of the following optionals may be taken (private lessons are subject to fees):

Piano. Preyer or assistants. (Two or four hours.)

Free-hand Drawing. Griffith. (Three hours.)

French 1, daily. (Five hours.)

Spanish 1, daily. (Five hours.)

German 1, daily. (Five hours.)

Second Semester:

Vocal Culture 3, twice a week, by appointment. Butler, Downing, Farrell, or Olcott. (Three hours.)

Harmony (Musical Theory 4), Tu. F., at 3. Skilton. (Two hours.)

English 11, three hours a week. (Three hours.)

History of Music, Th., at 4. Skilton. (One hour.)

Recitals 4. (One hour.)

Chorus Singing 4. (One hour.)

German 2, (Fine Arts) M. W. F., at 8:30. (Three hours.)

Any of the following optionals may be taken (private lessons are subject to fees):

Piano. Preyer or assistants. (Two or four hours.)

Free-hand Drawing. Griffith. (Three hours.)

French 2, daily. (Five hours.)
 Spanish 2, daily. (Five hours.)
 German 2, daily. (Five hours.)

JUNIOR YEAR.

First Semester:

Vocal Culture 5, twice a week, by appointment. Butler, Downing, Farrell, or Olcott. (Four hours.)
 Counterpoint (Musical Theory 5), M., at 3. Preyer. (One hour.)
 Composition (Musical Theory 7), Th., at 3. Skilton. (One hour.)
 History of Music, Tu. Th. Skilton. (Two hours.)
 Recitals 5. (One hour.)
 Chorus Singing 5. (One hour.)
 English 12 *a* and *b*. History of English Literature. (Two or three hours.)
 Any of the following optionals may be taken (private lessons are subject to fees):
 Piano. Preyer or assistants.
 Drawing and Painting. Griffith. (Three hours.)
 German 3, daily. (Five hours.)
 French 1 or 3, daily. (Five hours.)
 Italian and Spanish as in Sophomore year.

Second Semester:

Vocal Culture 6, twice a week, by appointment. Butler, Downing, Farrell, or Olcott. (Four hours.)
 Counterpoint (Musical Theory 6), M., at 3. Preyer. (One hour.)
 Composition (Musical Theory 8), Th., at 3. Skilton. (One hour.)
 Acoustics, three hours a week, by appointment. (One hour.)
 Recitals 6. (One hour.)
 Chorus Singing 6. (One hour.)
 History of Music, Tu. Th. Skilton. (Two hours.)
 English 13 *a* and *b*. History of English Literature. (Two or three hours.)
 Thesis 1. Skilton. (One hour.)
 Any of the following optionals may be taken (private lessons are subject to fees):
 Piano, by appointment. Preyer or assistants. (Two or four hours.)
 Drawing and Painting. Griffith. (Three hours.)
 German 4, daily. (Five hours.)
 French 2 or 4, daily. (Five hours.)
 Italian and Spanish as in Sophomore year.

SENIOR YEAR.

First Semester:

Vocal Culture 7, twice a week, by appointment. Butler, Downing, Farrell, or Olcott. (Five hours.)
 Canon and Fugue (Musical Theory 11), W., at 11. Preyer. (One hour.)
 Recitals 7. (One hour.)
 Chorus Singing 7. (One hour.)
 Thesis 2. Skilton. (One hour.)
 Optionals, English 50, 76, and 78. Other optionals as in previous years.
 Composition (Musical Theory 9), once a week, by appointment. Preyer. (One hour.)

Second Semester:

Vocal Culture 8, twice a week, by appointment. Butler, Downing, Farrell, or Olcott. (Five hours.)
 Recitals 8. (One hour.)
 Chorus Singing 8. (One hour.)
 Instrumentation (Musical Theory 12), W., at 3. Skilton. (One hour.)

Thesis 3. Skilton. (One hour.)
 Optional, English 77, 78, and 87. Other optionals as in previous years.
 Composition (Musical Theory 9), by appointment. Skilton. (One hour.)

DRAWING AND PAINTING.

Leading to the degree of Bachelor of Painting.

Students in drawing and painting are required to furnish their own materials, except easels.

All art work, when finished, is under the control of the instructors until after the close of the public exhibition of student work, at the end of the academic year.

FRESHMAN YEAR.

First Semester:

Drawing 1, daily, 9:30 to 12:30. Griffith and Hekking. (Five hours.)
 Drawing 13a, Composition, Tu. Th., at 2:30. Hekking. (Two hours.)
 Drawing 19, Artistic Anatomy, Tu. Th., at 3:30. Hekking. (Two hours.)
 Drawing 17, Perspective, Tu. Th., at 8:30. Griffith. (Two hours.)
 English 10, Tu. Th., at 1:30. (Two hours.)
 Rhetoric 1, M. W. F., at 1:30, 2:30 or 3:30. (Three hours.)

Second Semester:

Drawing 2, daily, at 9:30 to 12:30. Griffith and Hekking. (Five hours.)
 Drawing 28, Design. M. W. F., at 2:30 to 4:30. Benson. (Two hours.)
 Drawing 13b, Composition, Tu. Th., at 2:30. Hekking. (Two hours.)
 Drawing 4 or 18, Painting or Modeling, daily, at 8:30. Griffith and Hekking. (Two hours.)
 English 11, M. W. F., at 1:30. (Three hours.)
 Rhetoric 2, Tu. Th., at 1:30 or 3:30. (Two hours.)

SOPHOMORE YEAR.

First Semester:

Drawing 3, Life Class daily, 9:30 to 12:30. Griffith and Hekking. (Five hours.)
 Drawing 29, Design, M. W. F., 1:30 to 3:30. Benson. (Two hours.)
 Drawing 14a, Composition, Tu. Th., at 2:30. Hekking. (One hour.)
 Drawing 25, History of Painting, Tu. Th., at 9:30. Griffith. (Two hours.)
 Drawing 5, Painting, daily, 3:30 to 4:30. Griffith and Hekking. (Two hours.)
 Three Hours in College, selected from English 12, French 1 and 2, German 1 and 2, Spanish 1 and 2, Philosophy 1 and 2, Zoölogy 1, and History 1, M. W. F., at 8:30.

Second Semester:

Drawing 6, daily, 9:30 to 12:30. Griffith and Hekking. (Five hours.)
 Drawing 7 or 30, M. W. F., 2:30 to 4:30. Griffith and Benson. (Two hours.)
 Drawing 14b, Composition, Tu. Th., at 2:30. Hekking. (Two hours.)
 Drawing 26, American Painting, Tu. Th., at 9:30. Griffith. (Two hours.)
 Three hours selected from English 13, French, German, Spanish, Philosophy, or History, M. W. F., at 1:30.

JUNIOR YEAR.

First Semester:

(For students of Painting.)

Drawing 8 or 9, Painting, daily, 9:30 to 12:30. Griffith, Hekking. (Five hours.)

Drawing 20, Advanced Artistic Anatomy, Tu. Th., at 1:30. Hekking. (Two hours.)

Drawing 21, Sketch Class, M. W. F., at 3:30. Griffith, Hekking. (Two hours.)

Drawing 15a, Composition, Tu. Th., at 2:30. Hekking. (One hour.)

Five hours in the College, selected from English 50, French, German, Spanish, History or Greek Architecture 61.

(For students of Design.)

Drawing 8, daily, 9:30 to 12:30. Griffith and Hekking. (Five hours.)

Drawing 31, Design, daily, 1:30 to 4:30. Benson. (Five hours.)

Greek Architecture 61, Tu. Th., at 11:30. (Two hours.)

Three hours selected from above list in the College.

Second Semester:

(For students of Painting.)

Drawing 10, Painting, daily, 9:30 to 12:30. Griffith and Hekking. (Five hours.)

Drawing 15b, Composition, Tu. Th., at 2:30. Hekking. (Three hours.)

Drawing 27, Art Criticism, Tu. Th., at 8:30. Hekking. (Two hours.)

Drawing 22, Sketch Class, M. W. F., at 3:30. Griffith and Hekking. (Two hours.)

Three hours selected from the College, as in the first semester.

(For students of Design.)

Drawing 32, Design, daily, 9:30 to 12:30. Benson. (Five hours.)

Drawing 15b, Composition, Tu. Th., at 2:30. Hekking. (Three hours.)

Drawing 27, Art Criticism, Tu. Th., at 8:30. Hekking. (Two hours.)

Greek Sculpture and Painting, Tu. Th., at 11:30. (Two hours.)

Three hours selected from the College, as in the first semester.

SENIOR YEAR.

First Semester:

(For students of Painting.)

Drawing 11, daily, 9:30 to 12:30. Griffith and Hekking. (Five hours.)

Drawing 16a, Composition, Tu. Th., at 2:30. Hekking. (Five hours.)

Drawing 23, Sketch Class, M. W. F., at 2:30. Griffith, Hekking. (Two hours.)

Three hours selected in the College, as in the Junior year.

(For students of Design.)

Drawing 33, Applied Design, daily, 8:30 to 12:30. Benson. (Five hours.)

Drawing 16a, Composition, Tu. Th., at 2:30. Hekking. (Five hours.)

Drawing 35, History of Ornament, Tu. Th., at 1:30. (Two hours.)

Three hours selected in the College, as in the Junior year.

Second Semester:

(For students of Painting.)

Drawing 12, daily, 9:30 to 12:30. Griffith and Hekking. (Five hours.)

- Drawing 16b, Composition, Tu. Th., at 2:30. Hekking. (Three hours.)
 Drawing 24, Sketch Class, M. W. F., at 3:30. (Two hours.)
 Drawing 38, Graduation Thesis. (Two hours.)
 Three hours selected in College, or the School of Education.
 (For students of Design.)
 Drawing 34, Applied Design, daily, 8:30 to 11:30. Benson. (Five hours.)
 Drawing 16b, Composition, Tu. Th., at 2:30. Hekking. (Three hours.)
 Drawing 36, History of Ornament, Tu. Th., at 1:30. (Two hours.)
 Drawing 38, Graduation Thesis. (Two hours.)
 Three hours selected in the College or School of Education.
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PUBLIC-SCHOOL MUSIC COURSE.

Leading to Teacher's Certificate in Public-school Music.

Professor DOWNING.

The course in public-school music is designed to prepare students to become teachers and supervisors of music in grade and high schools. Only the best modern methods are employed, and the training is so closely graded that, at the end of the course, the student has prepared full courses of music study for all grades, beginning with the kindergarten and ending with the senior year of the high school. Actual teaching experience is gained by conducting classes in the Oread High School and by training classes of children. Special attention is given to correct methods of conducting.

At least one year of study in singing is required of students who prefer piano as a major. Ability to play the simpler compositions for piano or other instruments is required of students who take singing as a major.

Students must attend the Lawrence Choral Union rehearsals during both years of the course if they are not members of an acceptable church choir.

Teachers with normal training or experience in public schools and some preparatory work in music may be able to complete the two-year course in one year. Credit is allowed for teaching experience or normal training in accredited schools. Upon the completion of this course the State Board of Education will issue a special certificate entitling the holder thereof to teach music in any of the grade or high schools of the state.

As there is such a demand for orchestras in the high schools, a class in violin playing has been formed for the students in this course. In this class proper methods of fingering and bowing are taught, and the student is given practical experience in the use of the violin as an orchestral instrument.

The School of Fine Arts rents violins to those students who may not possess an instrument.

Candidates for this certificate must offer 60 credit hours. The following subjects are *required*. Enough subjects to complete the necessary 60 hours may be offered from the School of Fine Arts, the College and the School of Education, by arrangement with the Dean.

FRESHMAN YEAR.

First Semester:

- Methods of Teaching Music in Elementary Schools 1, M. Th., at 8. Downing. (Two hours.)
 Sight Singing 1, Tu., at 1. Downing. (One-half hour.)
 Ear Training, Th., at 1. Downing. (One-half hour.)
 Harmony (Musical Theory 1), Tu. Th., at 2. Skilton. (Two hours.)

History of Music, Th., at 4. Skilton. (One hour.)
 Choral Practice 1. (One hour.)
 Voice or piano lessons by appointment.
 (Private lessons are subject to fees.)

Second Semester:

Methods of Teaching Music in Elementary Schools 2, M. Th., at 8.
 Downing. (Two hours.)
 Sight Singing 2, Tu., at 1. Downing. (One-half hour.)
 Ear Training 2, Th., at 1. Downing. (One-half hour.)
 Harmony (Musical Theory 2), Tu. Th., at 2. Skilton. (Two hours.)
 History of Music, Th. Skilton. (One hour.)
 Choral Practice 2. (One hour.)
 Methods of Teaching, three hours. (School of Education.) (Three hours.)
 Voice or piano lessons by appointment.
 (Private lessons are subject to fees.)

SOPHOMORE YEAR.

First Semester:

Methods of Teaching Music in the Higher Grades and in the High Schools, Tu. Th., at 11. Downing. (Two hours.)
 Practice Teaching, by appointment. (One hour.)
 Sight Singing 3, Tu., at 1. Downing. (One-half hour.)
 Ear Training 3, Th., at 1. Downing. (One-half hour.)
 Harmony (Musical Theory 3), Tu. F., at 3. Skilton. (Two hours.)
 History of Music, Tu. Th. Skilton. (Two hours.)
 Choral Practice 3. (One hour.)
 General Psychology, three hours. (Three hours.)
 Voice or piano lessons by appointment.
 (Private lessons are subject to fees.)

Second Semester:

Methods of Teaching Music in High Schools, Tu. Th., at 11. Downing. (Two hours.)
 Practice Teaching, by appointment. (One hour.)
 Sight Singing 4, Tu., at 1. Downing. (One-half hour.)
 Ear Training 4, Th., at 1. Downing. (One-half hour.)
 Harmony (Musical Theory 4), Tu. F., at 3. Skilton. (Two hours.)
 History of Music, Tu. Th. Skilton. (Two hours.)
 Instrumentation (Musical Theory 12), W., at 3. Skilton. (One hour.)
 Choral Practice 4. (One hour.)
 Voice or piano lessons by appointment.
 (Private lessons are subject to fees.)
 Elementary Education, three hours, at 8:30. (School of Education.) (Three hours.)
 Optional: Folk dances, singing and dancing games, by appointment.

PUBLIC-SCHOOL ART COURSE.

Leading to Teacher's Certificate in Public-school Art.

Professors: GRIFFITH, HEKING.

Instructor: BENSON.

The course in public-school art is designed to prepare students to become teachers and supervisors of art in grade and high schools. In addition to the work in methods of teaching art in the public schools, strict attention is given to actual practice in free-hand drawing, perspective, composition, design, and artistic anatomy. To comply with the regulations of the State Board of Education, nine hours of educational work in

the College and the School of Education is included in the course. Upon the completion of this course the State Board of Education will issue a special certificate entitling the holder thereof to teach art in any of the grade or high schools of the state.

SYLLABUS.

The course is a two-year course, requiring sixty credit hours for its completion.

For a description of these courses, see Drawing and Painting.

Free-hand Drawing (courses 1, 2, 3, and 4)	12 credit hours.
Perspective (course 17)	2 credit hours.
Composition (courses 13a and 13b)	4 credit hours.
Design (courses 28, 29, 31, and 32)	14 credit hours.
Artistic Anatomy (course 19)	2 credit hours.
Art History (courses 25 and 26)	4 credit hours.
Methods of Teaching Art in the Grade and High Schools (course 37)	8 credit hours.
General Psychology (The College)	3 credit hours.
Methods of Teaching (The School of Education)	3 credit hours.
Elementary Education (The School of Education)	3 credit hours.
Optional subjects from The School of Fine Arts, The College, or The School of Education	5 credit hours.
Total	<hr/> 60 credit hours.

DESCRIPTION OF COURSES.

The courses in English, French, Italian, German, Greek, physical education, and physics are given in the College. They are open to regular fine arts students, on application to the Dean of the School of Fine Arts, but students must also enroll with the Dean of the College.

DRAWING AND PAINTING.

Professors: GRIFFITH, HEKING.

Instructor: BENSON.

All courses are required of students of drawing and painting and are open to other students of the School of Fine Arts who are prepared for them.

1.—FREE-HAND DRAWING. Free-hand drawing from the cast in charcoal. The method of instruction aims to teach construction in a simple and correct manner. Freshmen, first semester, daily, 9:30 to 12:30.

2.—FREE-HAND DRAWING. Free-hand drawing in charcoal from the head and cast. Freshmen, second semester, daily, 9:30 to 12:30.

3.—FREE-HAND DRAWING. Free-hand drawing from the living model. Sophomore, first semester, daily, 9:30 to 12:30.

4.—PAINTING. Painting with oil, water-color or pastel from still life. Students begin the study of color in this class. The observation and reproduction of simple masses of form and color. Freshmen, second semester, daily, at 8:30.

5.—PAINTING. A continuation of course 4. Sophomore, first semester, daily, at 8:30.

6.—PAINTING. Painting from the living model. Sophomore, second semester, daily, 9:30 to 12:30.

7.—PAINTING. Painting from landscape. Sophomore, second semester, M. W. F., 2:30 to 4:30.

8.—PAINTING. A continuation of course 6. Junior, first semester, daily, 9:30 to 12:30.

9.—PAINTING. A continuation of course 7. Junior, first semester, daily, 9:30 to 12:30.

10.—PAINTING. Painting from life or landscape as student may elect. Junior, second semester, daily, 9:30 to 12:30.

11.—PAINTING. A continuation of course 10. Senior, first semester, daily, 9:30 to 12:30.

12.—PAINTING. A continuation of course 11. Senior, second semester, daily, 9:30 to 12:30.

13a-b, 14a-b, 15a-b, 16a-b.—COMPOSITION. Throughout the entire course every student is required to study the compositions of the masters and to make each week one original composition upon a given subject. Tu. Th., at 2:30.

17.—PERSPECTIVE. Linear perspective and the geometrical problems of mechanical drawing. Freshmen, first semester, Tu. Th., at 8:30.

18.—MODELING. Modeling in clay from the cast. Freshmen, second semester, daily, at 8:30.

19.—ARTISTIC ANATOMY. Freshmen, first semester, Tu. Th., at 3:30.

20.—ARTISTIC ANATOMY. An advanced course for Juniors. First semester, Tu. Th., at 1:30.

- 21, 22, 23, 24.—**SKETCH CLASS.** Junior and Senior, both semesters, M. W. F., at 3:30.
- 25.—**HISTORY OF MODERN PAINTING.** Sophomore, first semester, Tu. Th., at 9:30.
- 26.—**HISTORY OF AMERICAN PAINTING.** Sophomore, second semester, Tu. Th., at 9:30.
- 27.—**ART CRITICISM.** A study of pictures from an analytical point of view, taking up the ideals and aims of the artist in the making of his product. Junior, second semester, Tu. Th., at 8:30.
- 28.—**DESIGN.** Elementary design. Freshmen, second semester, M. W. F., 2:30 to 4:30.
- 29.—**DESIGN.** A continuation of course 28. Sophomore, first semester, M. W. F., 1:30 to 3:30.
- 30.—**DESIGN.** Advanced design. Sophomore, second semester, M. W. F., 2:30 to 4:30.
- 31.—**DESIGN.** The application of design as applied to the production of ceramic art, metal work, textile, leather, and wood work. Junior, first semester, daily, 1:30 to 4:30.
- 32.—**DESIGN.** A continuation of course 32. Junior, second semester, daily, 9:30 to 12:30.
- 33.—**DESIGN.** A continuation of course 32. Senior, first semester, daily, 9:30 to 12:30.
- 34.—**DESIGN.** A continuation of course 33. Senior, second semester, daily, 8:30 to 11:30.
- 35.—**HISTORY OF DESIGN.** The general principles of historic ornament. Senior, first semester, Tu. Th., at 1:30.
- 36.—**HISTORY OF DESIGN.** A continuation of course 35. Senior, second semester, Tu. Th., at 1:30.
- 37.—**NORMAL ART.** Time to be arranged.
- 38.—**GRADUATION THESIS.** Every student receiving a degree from the University must leave with the department an example of original work made during the Senior year, the studies and design for same to be approved by the head of the department before the end of the first semester.

ENGLISH LANGUAGE AND LITERATURE.

Professors: DUNLAP, HOPKINS, O'LEARY.

Associate Professors: WHITCOMB, JOHNSON, SISSON, LYNN.†

Assistant Professor: GARDNER.

- 1.—**RHETORIC AND ENGLISH COMPOSITION.** Three hours, first semester. Required of all Freshmen in the School of Fine Arts.
Gardner, and assistants.
- 2.—**RHETORIC AND ENGLISH COMPOSITION.** Two hours, second semester. A continuation of course 1. Required of all Freshmen in the School of Fine Arts.
Gardner, and assistants.
- 10.—**ENGLISH LITERATURE.** Two hours, first semester. Required in the first two years of the School of Fine Arts. Johnson, and assistants.
- 11.—**ENGLISH LITERATURE.** Three hours, second semester. A continuation of course 10. Required of Sophomores in the School of Fine Arts.
Johnson, and assistants.
- 12 *a* and *b*.—**HISTORY OF ENGLISH LITERATURE.** Two or three hours, first semester. Required for admission to courses 76, 77, 78, and 87. Required of all Juniors in the School of Fine Arts.
Lynn, and assistants.

† Absent on leave, 1916-'17.

13 *a* and *b*.—HISTORY OF ENGLISH LITERATURE. Two or three hours, second semester. A continuation of course 12. Required for admission to courses 76, 77, 78, and 87. Lynn, and assistants.

50.—NARRATION AND DESCRIPTION. Three hours, first semester.

O'Leary and Lynn.

51.—NARRATION AND DESCRIPTION. Two hours, second semester. A continuation of course 50. O'Leary and Lynn.

76.—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Three hours, first semester. Dunlap.

77.—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Three hours, second semester. Dunlap.

78.—SHAKSPEARE. Three hours, both semesters. Dunlap.

87.—THE ENGLISH NOVEL. Three hours, second semester. Dunlap.

FRENCH.

Professor: GALLOO.

Associate Professor: NEUENSCHWANDER.

Assistant Professors: COWPER, SKIDMORE.

1.—ELEMENTARY FRENCH I. Five hours, both semesters. NeuenSchwander, Cowper, Skidmore.

2.—ELEMENTARY FRENCH II. Five hours, both semesters. NeuenSchwander, Cowper, Stanton.

3.—MODERN FRENCH PROSE. Three hours, both semesters. NeuenSchwander, Skidmore, Gardner, Stanton.

4.—COMPOSITION. Two hours, both semesters. Cowper, Skidmore, Stanton.

GERMAN.

Professor: ENGEL.

Associate Professor: CORBIN.

C1.—ELEMENTARY GERMAN. Five hours credit, both semesters. Engel, Corbin, and assistants.

C2.—PROSE READINGS. Five hours credit, both semesters. Engel, Corbin, and assistants.

C3.—INTERMEDIATE GERMAN. Five hours credit, both semesters. Engel, Corbin, and assistants.

C4.—GERMAN CLASSICS. Five hours credit, both semesters. Engel, Corbin, and assistants.

The following courses are arranged for regular students of voice, and are required in the Sophomore year:

1.—GERMAN GRAMMAR (Fine Arts). Vos's Essentials of German, with emphasis on correct pronunciation and sentence melody. First semester, M. W. F., at 8:30. (Three hours.)

2.—GERMAN READING (Fine Arts). Vos's Essentials of German completed. Reading of easy German prose and selected lyric poems. Second semester, M. W. F., at 8:30. (Three hours.)

GREEK.

Professor: WILCOX.

Associate Professor: BRANDT.

69.—GREEK ARCHITECTURE. Two hours, first semester. Brandt.

70.—GREEK SCULPTURE AND PAINTING. Three hours credit. Second semester. Brandt.

ITALIAN.

*Professor: GALLOO.**Assistant Professor: COWPER.*

- 1.—ELEMENTARY ITALIAN I. Three hours credit, first semester.
Cowper.
- 2.—ELEMENTARY ITALIAN II. Continuation of course 1. Three hours credit, second semester, by appointment.
Cowper.

MUSICAL THEORY.

Professors: SKILTON, PREYER.

The following courses are required of all students in the regular music courses, excepting 9 and 10, which are optional:

1.—HARMONY. The study of overtones, scales, intervals, triads and seventh chords and their inversions. The practical work consists of harmonizing melodies in soprano or bass and playing chord progressions at the piano. Freshman, first semester, Tu. Th., at 2. Chadwick's Harmony used.
Skilton.

2.—HARMONY. The study of close and open harmony, dominant ninth and diminished seventh chords, modulations. Practical work continued. Freshman, second semester, Tu. Th., at 2.
Skilton.

3.—HARMONY. The study of modulation, irregular resolutions, altered chords, suspensions, passing tones, organ point, harmonization of florid melodies. Practical work continued. Sophomore, first semester, Tu. F., at 3.
Skilton.

4.—HARMONY. Suspensions, passing tones, appoggiaturas, neighboring tones, organ point, harmonization of florid melodies, analysis. Practical work continued. Sophomore, second semester, Tu. F., at 3. Skilton.

5.—COUNTERPOINT. The different orders of single counterpoint in two, three and four parts. Junior, first semester, M., at 3. Preyer.

6.—COUNTERPOINT. Double and triple counterpoint, counterpoint in the twelfth and fifteenth and in more than four parts. Modern counterpoint. Junior, second semester, M., at 3. Preyer.

7.—MUSICAL COMPOSITION. The theme and variations, dance and song forms. Analysis of classical models, and practical work. Junior, first semester, Th., at 3. Skilton.

8.—MUSICAL COMPOSITION. The sonata and rondo forms; analysis of classical sonatas; original work. Junior, second semester, Th., at 3. Skilton.

9.—MUSICAL COMPOSITION. Original work in modern forms. Open only to those who show talent for composition. Senior, first semester, W., at 9. Preyer.

10.—MUSICAL COMPOSITION. Continuation of course 9. These two courses are open only to those who show talent for composition. Senior, second semester, W., at 3. Preyer.

11.—CANON AND FUGUE. The various forms of canon and their use in composition. The fugue and original work. Senior, first semester, W., at 3. Preyer.

12.—INSTRUMENTATION. The nature and treatment of the different instruments of the orchestra. The overture, symphony, cantata. Practical work for the University Orchestra. Senior, second semester, W., at 3. Skilton.

ORGAN.

Professor: SKILTON.*Instructor:* EMBLEY.

1.—MANUAL AND PEDAL STUDIES. Merkel or Archer. Pedal scales and arpeggios; the principles of hymn playing. Sophomore, first semester, one hour a week, by appointment.

2.—MANUAL AND PEDAL STUDIES. Buck's Studies in Pedal Phrasing; Schmidt's Organ Etudes; Bach's Little Preludes and Fugues, Flagler's The Organist's Treasury, and other selections. Sophomore, second semester, one hour, by appointment.

3.—SERVICE AND SOLO PLAYING. Buck's Choir Accompaniment. Various styles of hymn playing; accompaniment of solo and chorus. Schneider's Pedal Studies, easier preludes and fugues of Bach and Mendelssohn. Modern pieces by Batiste, Lemmens, Guilmant, and others. Junior, first semester, two hours, by appointment.

4.—SERVICE AND SOLO PLAYING. Arrangement of piano accompaniment for organ. Practice in accompanying singers. The easier sonatas of Mendelssohn, Merkel, Guilmant, and others. Junior, second semester, two hours, by appointment.

5.—CHURCH AND CONCERT PLAYING. Practical work in playing the church service. The more difficult fugues and sonatas. Concert pieces by Widor, Guilmant, Saint-Saëns, Thiele, and others. Senior, first semester, two hours a week, by appointment.

6.—CHURCH AND CONCERT PLAYING. Extemporization and transposition. Program making. Preparation of a recital. Senior, second semester, two hours a week, by appointment.

7.—CHURCH MUSIC. The history of church music, examination of different schools and styles. Senior, first semester, one hour a week.

8 and 9.—ORGAN CONSTRUCTION. Examination of tracker, tubular pneumatic, and electric action in available organs. Practice in tuning. One hour a week, Junior year, by appointment.

PIANOFORTE.

Professor: PREYER.*Assistant Professors:* GREISSINGER, SWEENEY.*Instructors:* MILLER, EMBLEY.

Courses 1 to 12, inclusive, are open only to students of the School of Fine Arts.

1 and 2.—PIANO. Hanon: Virtuoso Pianist. A limited number of studies from the following: Hoffman, Etudes for the Left Hand; Cramer-Buelow, Sixty Selected Etudes; Preyer, Twenty Etudes, op. 25 (Schirmer); Bach, two-part inventions (Litolff, No. 42), etc. Sonatas by Haydn, Mozart, Beethoven. Selections from classic and modern compositions. Freshman, throughout the year, twice a week, by appointment. Assistants.

3 and 4.—PIANO. Pischna: Technical Exercises. Etudes, selected according to the needs of the pupil, from Jensen, op. 32; MacDowell, op. 39; Haberbier, Etudes Poesies, op. 53; Preyer, op. 30 and op. 45; Hollaender, intermezzi for left hand; Bach, three-part inventions. Concertos by Mozart, Hummel, etc. Selections from classic and modern compositions. Sophomore, throughout the year, twice a week, by appointment. Assistants.

5 and 6.—Phillipp: Daily Exercises. Clementi's Gradus ad Parnasum; Etudes from Moscheles, op. 70; Seeling, Concert Etudes, op. 10; Chopin, Preludes; Bach, Well-tempered Clavichord (Reinecke, B. and H.); concertos by Beethoven, Mendelssohn, etc.; concert pieces by classic and modern composers. Junior, throughout the year, private lessons, twice a week, by appointment. Preyer.

7 and 8.—*Joseffy*: School of Advanced Piano Playing. *Phillipp*, Etudes for the Left Hand; Etudes from *Chopin*, op. 10 and op. 25; *Rubinstein*, op. 23, etc. Sonatas and concertos by *Beethoven*, *Weber*, *Grieg*, etc. Concert pieces by modern composers. Senior, throughout the year, private lessons, twice a week, by appointment. *Preyer*.

9 to 12.—A course for the study of pianoforte methods, aiming to develop independence of the fingers, and acquiring correct habits of practicing the scales, arpeggios, trills, octaves, chords, etc. Freshman and Sophomore, throughout the year. Wednesday, 3:30 to 4:30. *Miller*.

13.—TEACHING MATERIALS. A study of teaching materials for piano. Each pupil is required to keep a notebook, teach one practice student and attend a one-hour class each week. Open to all classes but Freshman, and to advanced special students. Required of candidates for a certificate in piano, once a week, throughout the year, by appointment.

Greissinger.

PHYSICAL EDUCATION.

Professor: *NAISMITH*.

Associate Professor: *CHILD*.

1.—MARCHING. First semester.

2.—ADVANCED WORK. Second semester.

3.—EDUCATIONAL WORK WITH LIGHT AND HEAVY APPARATUS. First semester.

4.—SPECIALIZING IN SOME LINE OF EXERCISE. Second semester.

PHYSICS.

Professor: *KESTER*.

Assistant Professor: *STIMPSON*.

2.—ELEMENTARY ACOUSTICS. A course of about twenty lectures, with demonstrations, upon the scientific basis of harmony. Required of students of the School of Fine Arts. Third half-term, M. W., at 4:30. Given in alternate years. *Stimpson*.

PUBLIC-SCHOOL MUSIC.

Music Supervisors' Course.

Professor: *DOWNING*.

TEACHING OF MUSIC IN ELEMENTARY SCHOOLS. Logical development in teaching: Rote song; staff notation; scales without technical explanation; scales with technical explanation; use of paper keyboards; ear training; reading at sight; triads; chords; simple modulation; transposition.

General Pedagogical Problems.—Advantage of normal training; relation of supervisor to grade teacher, principal, and superintendent; types of children. Examination of books and materials.

EAR TRAINING AND DICTATION. *First Year*.—Melodic and rhythmic dictation within the key; triads in all forms; triads in key relation, major and minor; the dominant sept chord.

Second Year.—Short review of first-year work; two-part melodic dictation; simple modulations; the various sept chords and their resolutions and progressions; chromatic and passing tones; dictation work with chords.

SIGHT SINGING OR SOLFEGGIO. *Elementary.*—Degree-wise progressions within the key; tapping rhythm; drill on simple intervals in chord lines; individual and class work. Textbook, "Melodia," Cole and Lewis.

Intermediate and Advanced.—More difficult problems in rhythm and intervals; two-, three- and four-part work. Texts: "Melodia," Cole and Lewis; "Harmonia," Cole and Lewis.

Students may enter classes upon examination or satisfactory completion of previous work.

TEACHING OF MUSIC IN HIGH SCHOOLS. High-school music from artistic and scientific viewpoints. Choral singing (including sight singing); girls' and boys' glee clubs; high-school orchestra; classes in history and theory (harmony, ear training, analysis). Outlines for courses of study in logical development of teaching the simpler forms of musical theory, suitable for use in high schools.

General Pedagogical Problems.—The general supervisor as high-school teacher of music; preparation of University graduates for teaching music and some other subject; the relation of the music teacher to other teachers in the high school; value of courses in psychology and education to those preparing to teach music; planning work for high schools where no definite courses have been followed. Examination of books and materials.

Practice teaching and observation of classes in Oread Training School, by appointment with director of this department.

FORM AND ANALYSIS. Reading of simple chords from hymns and chorales; analysis of keys in songs and piano music, with particular attention to modulation and key relationship, the use of passing tones, simple suspensions. Analysis of some of Bach's Inventions, Mendelssohn's Songs without Words, etc., for illustrations of the simpler musical forms. This course not required of those completing the regular Fine Arts course.

College Course.

1a.—GENERAL PSYCHOLOGY. Three hours, first semester, at 10:30, on Monday and Wednesday, and third hour by appointment. A general study of human consciousness and behavior, with reference both to scientific theory and to practical application. This course is a prerequisite to 1b, and to courses 2a, 2b, and 50 to 69, inclusive; but it can be taken at the same time with 1b. It is required for admission to the School of Education. The course is open to students who have taken psychology in high school, as well as to those who have not done so. It should be preceded by elementary courses in the biological and physical sciences. Hunter, Dockeray.

School of Education Courses.

1.—METHODS OF TEACHING. Three hours, second semester, at 10:30. This course will deal with those fundamental principles of method that will be most helpful to teachers in the organization and presentation of subject matter. The illustrative materials will be taken from a wide range of subjects, but the emphasis will be upon the problems that pertain particularly to the elementary schools. Nutt.

2.—ELEMENTARY EDUCATION. Three hours, second semester, at 8:30. The elementary school and its problems are considered in the light of the historical development, characteristic tendencies, position in the educational system, organization, relation to the community, and course of study. Among the topics discussed are: compulsory education; re-organization of the curriculum; length of period for elementary educa-

tion; vacation schools; playgrounds and physical education; standard tests; progression through the grades; systems of promotion; special classes; and rural education. Olney.

VIOLIN.

Professor: MORSE.

1 and 2.—KREUTZER'S FORTY STUDIES. Scale Studies by Alard or Schradieck. Selections from Sevcik's Four Thousand Bow Studies. Solos by Singelee, Alard, Leonard, Bohm, Daube, and others. Duets by Mazas and Dancla. Concertos by Rode and De Beriot.

3 and 4.—KREUTZER'S FORTY STUDIES. Fiorillo's Thirty-six Studies. Scale Studies by Alard or Schradieck. Selections from Sevcik's Four Thousand Bow Studies. Sonatas, concertos, selections from compositions of Bach, Handel, Beethoven, De Beriot, Ernst, Vieuxtemps, Viotti, Wieniawski, Brahms, Leonard, Sarasate, Hubay, and Kreisler. Ensemble playing.

5 and 6.—KREUTZER'S FORTY STUDIES. Fiorillo's Thirty-six Studies. Selections from Sevcik's Technic Studies. Sonatas of Bach, Handel, Beethoven, Rubinstein, Franck, Grieg, and Sjogren. Selections from compositions of Wieniawski, Leonard, Hubay, Sarasate, Bazzini, Saint-Saëns, Vieuxtemps, Zarzycki, Natchez, Shubert, Schumann, and Chopin. Violin duets. Standard concertos. Ensemble playing.

7 and 8.—FIORILLO'S THIRTY-SIX STUDIES. Rode's Twenty-four Studies. Selections from Sevcik's Technic Studies. Sonatas for violin alone by Bach. Compositions of Handel, Tartini, Ernst, Paganini, Wieniawski, Vieuxtemps, and others. Standard concertos. Selections from compositions of American composers, including study of trios, quartets, and orchestral compositions. Other ensemble work.

VOCAL CULTURE.

Dean: BUTLER.

Professor: DOWNING.

Associate Professor: FARRELL.

Instructors: OLCOTT, REYNOLDS.

1 and 2.—TONE PLACING AND BREATH CONTROL. Dictation exercises for the special needs of the individual voice. Sustained tones. Breath control and the true legato. The study of conditions necessary for the poising of the voice. The Italian vowels. Technical exercises selected from Marchesi, Lamperti, Sieber, Abt, Panofka, Garcia, and Shakspeare. Simple English and Italian songs. Freshman, twice a week throughout the year, by appointment.

3 and 4.—VOICE EXTENSION. Development of tone. Breath control. Exercises for flexibility from Lamperti, Nava, Concone, Vannini, Bordogni, Sieber, and Shakspeare. English and Italian songs. German lieder. Church solos. Sophomore, twice a week throughout the year, by appointment.

5 and 6.—STUDY OF TONE COLOR. Exercises for flexibility, continued. Embellishments. Exercises from Concone, Panofka, Marchesi, Garcia, Panseron, and Rossini. German lieder, English oratorio, and church solos. Junior, twice a week throughout the year, by appointment.

7 and 8.—STYLE AND INTERPRETATION. A comparative study. Exercises for bravura singing from Marchesi. Flexibility and finishing exercises from the masterpieces of vocalization. Stage deportment. Selections from opera and oratorio. Modern Italian, German, and French song literature. Senior, twice a week throughout the year, by appointment.

9.—SIGHT SINGING. Sound relationship. Time relationship. Rhythm. Dictation exercises. Unison, two parts, three parts, and four parts. Downing.

10.—OPERA. Solos, duos, trios and ensemble numbers from the standard operas.

11.—ORATORIO. Solo and chorus drill in the standard oratorios. Singers from the University and city are united to form the Choral Union. An oratorio will be given each year.

12.—TEACHER'S COURSE. For students desiring to prepare themselves especially for teaching. Text: Manual Garcia. Downing.

For description of graduate courses, see Section II, The Graduate School.

SECTION VI.
School of Law.

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FACULTY.

FRANK STRONG, Ph. D., President.

JAMES W. GREEN, A. M., Dean, and Professor of Law.

WILLIAM L. BURDICK, Ph. D., LL. B., Professor of Law.

WILLIAM E. HIGGINS, B. S., LL. B., Professor of Law.

HENRY W. HUMBLE, A. M., J. D., Professor of Law.

EDWARD D. OSBORN, Professor of Law.

Lecturers for 1916-1917.

J. G. SLONECKER, United States Referee in Bankruptcy, Topeka.

HENRY F. MASON, Justice of the Supreme Court of Kansas.

ROUSSEAU A. BURCH, Justice of the Supreme Court of Kansas.

J. C. RUPPENTHAL, Justice of the District Court, Russell.

W. C. MICHAELS, Attorney at Law, Kansas City, Missouri.

D. A. VALENTINE, Clerk of the Supreme Court of Kansas.

THOS. E. WAGSTAFF, Attorney at Law, Independence, Kansas.

EDWIN A. KRAUTHOFF, Attorney at Law, Kansas City, Missouri.

The School of Law.

PURPOSE OF THE SCHOOL.

It is the aim of the School of Law to give its students a thorough acquaintance with the general principles of American law and to furnish a course of legal instruction that shall fit them to practice at the bar of any state of the Union; also to give those who do not expect to become practicing attorneys, but who desire to pursue certain legal subjects for their bearing upon business, such instruction as may be best suited to their needs.

DEGREE GRANTED.

The course of study of the School of Law occupies three years, and leads to the degree of bachelor of laws (LL. B.).

CERTIFICATE OF ATTENDANCE.

If the student does not graduate, he may, on application to the Registrar, receive an official certificate of his attendance and of the work accomplished by him in the School.

EXAMINATIONS.

The members of each class will be examined upon each topic when completed. A final examination will be held at the end of the third year, embracing all the studies of the course.

ADMISSION TO THE BAR.

The legislature of 1903 amended the statute regulating admission to the bar, and provided for state examinations by a commission appointed by the supreme court. This act provides that applicants must be graduates of this School of Law or of an institution of equal standing, or they must have studied law for three years in a law office. The board of examiners meets at Topeka on the third Monday in January and June. Applications for examination and proof of qualifications must be filed with the secretary of the board at least three weeks before the examination. Printed forms of application may be obtained from the clerk of the supreme court, Topeka, Kansas.

All applicants must present high-school certificates or affidavits from teachers showing the completion of the following subjects, or pass examinations therein, to wit: Three years English—grammar, rhetoric, and literature; arithmetic, algebra, geometry; general history, Roman, English, and American history; civil government; the elements of physics, physical geography, botany, biology; political economy and sociology.

All candidates for admission are required to pass a written examination covering their legal qualifications. All subjects included in this examination are within the course of study of the University School of Law.

ADMISSION.

WORK IN PREPARATION FOR LAW. All persons proposing to enter upon the study of law are earnestly recommended to take first either a regular or special course in the College. A good fundamental education is

necessary to a successful study of law. Especially is it necessary now when the practitioner must come into competition with men who have had a thorough university training before they entered upon the study of law.

The College offers special work in subjects of great value as preparatory to the study of law: English and American constitutional and political history, constitutional law, political science, economics, sociology, history of international and common law, rhetoric and English composition, and debating. These courses are especially recommended in preparation for law.

REQUIREMENTS FOR ADMISSION. Thirty hours credit in the College of Liberal Arts and Sciences of the University of Kansas, or its equivalent in some other university or approved college, in addition to graduation from a four-year high school, is required for entrance to the School of Law.

This credit may be proven by proper certificate of the authorities of the university or college where the work was done, or it may be obtained by examination upon application to the University of Kansas.

ADMISSION TO ADVANCED STANDING. Persons who have the requisite qualifications for admission to the School (see "Requirements for Admission," above) may be admitted to advanced standing in the Junior and Middle classes upon satisfying the Faculty as to their qualifications.

Certificates of work done in other law schools of recognized standing and equivalent requirements may be received in lieu of examinations for such advanced standing.

SPECIAL STUDENTS. Opportunity is given in the School of Law for the admission of persons of mature years who desire to pursue special work without following any prescribed course or becoming candidates for a degree.

The admission of such special students is under the control of the Dean of the School, whose certificate of acceptance must be presented to the Registrar before registration. Applicants for standing as special students must present satisfactory evidence of proper preparation for the studies desired, and must also meet other requirements as fixed by the Faculty.

Special students are subject to the same regulations as regular students with regard to the quality of work performed and attendance at recitations and examinations.

REGISTRATION.

All candidates for admission to the Law School and all students intending to pursue studies therein during the ensuing year must present themselves for registration at the University on September 17, 18, or 19, 1917. *Registration at a later date will be permitted only on the payment of a fee of one dollar.*

ENROLLMENT.

After registration has been completed with the Registrar, and after fees have been paid, students should apply to the Dean for enrollment in their classes. Enrollment the first semester occurs September 18 and 19, 1917, and on the first day of the second semester. *Enrollment at a later date will be permitted only on the payment of a fee of one dollar.*

FEES AND EXPENSES.

Matriculation fee, for residents of the state	\$5.00
for nonresidents	10.00
Incidental fee, for residents of the state	25.00
for nonresidents	35.00
Diploma fee, at graduation	5.00

Information concerning the location of rooming and boarding places may be had at the office of the Registrar, or from the Secretary of the University Y. M. C. A.

The average price of board, rooms, light, and fuel may be placed at from \$4 to \$7 a week. Day board in private families and at city restaurants may be obtained for \$3.50 to \$5 a week. Day board in clubs varies from \$3.50 to \$4 a week. Furnished rooms, usually occupied by two students, range from \$4 to \$15 a month. Unfurnished rooms rent for \$1.50 to \$3 a month. Students who can supply their own furniture and buy and prepare provisions for the table themselves can lessen expenses materially.

STUDENT HONORS AND ACTIVITIES.

HONORS. By resolution, the State Bar Association of Kansas, as a recognition of the School of Law and for the purpose of encouraging its students to work along the line of legal literature, assigns a place on the literary program of the annual meeting at Topeka to that student of the Senior class who prepares the best paper on some legal topic assigned by the Law Faculty. The merits of the papers submitted are passed upon by a committee appointed for the purpose.

See, also, "Prizes and Aids," General Section, p. 54.

COOLEY CLUB. Meetings of the club occur once each week. Any student of the School of Law is eligible, but the membership is confined at present mainly to the members of the Junior and Middle classes. Legal questions are debated, and to this is added the work of the ordinary literary debating society.

KENT CLUB. The members of the Kent Club are, in the main, members of the Senior class, although any student in the School of Law is eligible to membership. The work consists of the discussion of legal, economic, and historical questions, and the consideration of legal literature. Debating is a prominent feature of the work of the club.

DEBATING. Interstate debates are held each year with Oklahoma, Missouri, and Colorado state universities. Members of the Law School are admitted to the preliminary contest held for the purpose of choosing representatives on each of these debates. Those chosen receive practical instruction in public speaking and debating from a committee of the general Faculty of the University. Law students are also eligible to membership in the general literary clubs of the University.

EQUIPMENT.

GREEN HALL. A building for the School of Law was completed during the summer of 1905, at a cost of \$65,000, and is one of the most complete and best-equipped law buildings in the West. It has three floors, devoted to recitation rooms, offices, library, and rooms for the Law School clubs. The library contains space for about 20,000 volumes, and private study rooms for students and Faculty open into the reading room of the library. A large room is set aside for a practice court, and the best facilities possible are available for students of the law.

LIBRARIES. The law library is composed of 8625 volumes, for the exclusive use of the students of the School of Law. The library has an excellent equipment of the best law textbooks, and new texts are being added constantly. It has also reports of the courts of last resort, both state and federal, as well as Lawyers' Reports Annotated, American Decisions, American Reports, the complete *Reporter* system, and the full reprints of the English cases. Limited space has prevented as rapid growth of the library as desired, and in the new building large additions will be made to the library equipment. In addition to the volumes devoted exclusively to law, the University library of 107,262 volumes is at

the disposal of the law students. They thus have at hand the largest and best-selected scholarly library in the Southwest. The city library, housed in the Carnegie building, is also open to students of the School of Law for books of fiction and general literature.

STATE LIBRARY. The state library, at Topeka, which is largely a law library, is easily accessible to students upon necessary occasions. Such works as may be found usually in large state libraries will therefore be at the disposal of the members of the Law School at various times during the year.

COLLEGE AND SCHOOL OF LAW IN SIX YEARS.

A regular course in the College is strongly recommended. During his Senior year of the College a student is permitted to elect one half-year's work from the course in the School of Law, for which he will receive credit in his College course. By this arrangement, the student, by reasonable extra work, may finish both the College and the School of Law in six years.

COURSES OF LAW IN THE SUMMER SESSION.

Attention is called to the opportunity of shortening the law course, or of correcting irregularities therein, by taking such law subjects as are offered in the Summer Session of the University.

A course has been arranged which will enable a person who enrolls in three Summer Sessions to graduate after attending two regular sessions of the University, provided he has previously completed the preparatory work required for entrance to the Law School, as laid down in this Catalog.

A candidate desiring to take the Summer Session program should enter a Summer Session at the beginning of his course; his program of sessions will then be as follows: (1) Summer Session; (2) Regular Session; (3) Summer Session; (4) Regular Session; (5) Summer Session.

A student entering in the summer of 1917 would take the following program:

SUMMER SESSION OF 1917.—Agency and Insurance, Partnership and Wills, Criminal Law and Torts.

REGULAR SESSION OF 1917-'18.—Real Property and Roman Law, Corporations, Equity, Bankruptcy, Trusts, Code Pleading, Constitutional Law, Suretyship, Conflict of Laws, and Practice Courts.

SUMMER SESSION OF 1918.—Partnership and Wills, Agency and Insurance, Criminal Law and Torts.

For further details, see Summer Session Section of Catalog, under "Law"; and "Description of Courses," in this section.

SYSTEM OF INSTRUCTION.

It is believed to be proved by experience that, to be thoroughly efficient, instructional training in law courses must be given by resident teachers who give their whole time to instruction. The work of the School of Law is under the direction of five resident instructors, supplemented by lectures on special topics by competent men in the actual practice of law.

METHOD OF TEACHING.

There are in general three methods of class instruction in law—by lectures, by textbooks, and by cases. The School of Law at the University does not pursue any method to the entire exclusion of the others. It uses the textbook method very largely for the beginning classes, and makes use of the lecture and case methods more largely as classes advance in the course.

The student is given large opportunity for free discussion of the topics in question, and is brought as much as possible into personal touch with his instructor.

PRACTICE COURTS.

There are three practice courts in the School of Law, all of them under the immediate supervision of the member of the Faculty who devotes the major part of his time to this work. The sessions are held in the court room, which has been fitted with all of the furniture to be found in court rooms in actual practice. Ample accommodations are furnished for judge, jury, and practitioners.

THE FIRST-YEAR PRACTICE COURT.

In the first year, preliminary instruction is first given in the analysis of opinions, and in the preparation of cases for argument. Following this preliminary instruction, court is held under the direction of the member of the Faculty in charge. The places of attorneys, clerk, and other court officers are filled in rotation by members of the class. Cases involving statements of facts are assigned. Written briefs are required to be presented, served upon the opposing attorneys, and submitted to a court composed of two members of the class and the members of the Faculty. Written opinions containing full discussion of the legal questions presented are required to be handed down by the student justices.

THE SECOND-YEAR PRACTICE COURT.

The aim of the course of the second year is to instruct in the preparation of cases before and after they are filed in court. To this end, statements of fact are given to the members of the class, in accordance with which trial briefs of the law and of the facts are made, and pleadings under the common law, equity and code systems of civil procedure are drawn. Each member of the class receives from the instructor in charge criticism of the work done. The code practice of the court follows closely the practice in the district courts of Kansas. Besides this work, a course of lectures is given on instructions to juries and findings of fact. Members of the class are required to draw journal entries, instructions, and findings, under direction of the instructor in charge of the course.

THE THIRD-YEAR PRACTICE COURT.

The work of the third year is a continuation of the work of the preceding two years. The student is taught how to begin and prosecute a case in court. The former difficulty of originating facts in practice courts has been overcome, and all the testimony of complicated cases is placed in the hands of witnesses, who are interviewed by the attorneys assigned. The cases are then begun, prosecuted and determined as in actual practice. Juries are drawn and impaneled, the evidence produced, instructions given, verdicts and judgments rendered as in the justice of the peace courts and in the district courts of Kansas. Following this, appeals are prosecuted in due course to the supreme court, where briefs are filed and arguments made as in the supreme court of Kansas.

Only four attorneys are assigned to each case, and there are enough cases for all members of the class to act as trial attorneys and as attorneys in the appellate court. Every member of the Senior class is thus given an opportunity to conduct a case as in actual practice.

Instruction is also given in legal ethics and in office practice.

For members of the courts a series of lectures on practical topics is arranged for the second term of each year.

CURRICULUM.

SCHEDULE OF COURSES.

KEY: (B.) Professor Burdick. (G.) Dean Green. (Hi.) Professor Higgins. (Hu.) Professor Humble. (O.) Professor Osborn.

FIRST YEAR.

FIRST QUARTER.		Time.	Hrs.	SECOND QUARTER.		Time.	Hrs.
Contracts (G.)	9:30	5		Contracts (G.)	9:30	5	
Criminal Law (B.)	10:30	5		Agency (Hu.)	10:30	5	
Elementary Law (Hu.)	11:30	5		Torts, Tu. Th. (O.)	11:30	2	
Court, Fri. (Hi.)	1:30	—		Court, Fri. (Hi.)	1:30	—	
THIRD QUARTER.				FOURTH QUARTER.			
Torts, M. W. Th. (O.)	9:30	3		Suretyship (O.)	9:30	5	
Sales (B.)	10:30	5		Damages (Hu.)	10:30	5	
Bailments (O.)	11:30	5		Domestic Relations (B.)	11:30	5	
Court, Fri. (Hi.)	1:30	—		Court, Fri. (Hi.)	1:30	—	

SECOND YEAR.

FIRST QUARTER.		Time.	Hrs.	SECOND QUARTER.		Time.	Hrs.
Common-law Pleading (Hi.)	8:30	5		Equity Pleading (Hi.)	8:30	5	
Insurance (Hu.)	9:30	5		Quasi Contracts (B.)	10:30	5	
Equity, M. W. Fri. (O.)	11:30	3		Equity, M. W. Fri. (O.)	11:30	3	
Court, M. W. (Hi.)	1:30	—		Court, M. W. (Hi.)	1:30	—	
THIRD QUARTER.				FOURTH QUARTER.			
Bills and Notes, M. W. Fri. (Hu.)	8:30	3		Bills and Notes, M. W. Fri. (Hu.)	8:30	3	
Trusts, Tu. Th. (Hu.)	8:30	2		Trusts, Tu. Th. (Hu.)	8:30	2	
Evidence (G.)	9:30	5		Evidence (G.)	9:30	5	
Code Pleading (Hi.)	10:30	5		Conflict of Laws (O.)	10:30	5	
Court, M. W. (Hi.)	1:30	—		Court, M. W. (Hi.)	1:30	—	

THIRD YEAR.

FIRST QUARTER.		Time.	Hrs.	SECOND QUARTER.		Time.	Hrs.
Real Property (B.)	9:30	4		Real Property (B.)	9:30	4	
Roman Law (B.)	9:30	1		Roman Law (B.)	9:30	1	
Corporations (O.)	10:30	5		Corporations (O.)	10:30	5	
Court, Tu. Th. (Hi.)	1:30	—		Bankruptcy, Tu. Th. (Hu.)	11:30	2	
				Court, Tu. Th. (Hi.)	1:30	—	
THIRD QUARTER.				FOURTH QUARTER.			
Real Property (B.)	9:30	4		Wills (B.)	10:30	5	
Roman Law (B.)	9:30	1		Constitutional Law (G.)	11:30	5	
Partnership (Hu.)	10:30	5		Court, Tu. Th. (Hi.)	—	—	
Constitutional Law (G.)	11:30	5					
Court, Tu. Th. (Hi.)	—	—					

DESCRIPTION OF COURSES.

FIRST-YEAR COURSES.

1.—ELEMENTARY LAW. First semester, first half, daily, at 11:30. An analytical study of the elements of jurisprudence; a historical examination of the systems of English and American common law and equity; an exemplification of common-law theories in the law of trespass; conversion. Pound's History and System of Common Law. Humble.

2.—CRIMINAL LAW. First semester, first half, daily, at 10:30. Common-law and statutory offenses; parties in crime; classification and elements of the specific offenses; criminal procedure; jurisdiction, arrest, extradition, examination and bail, indictment, trial, evidence, proceedings after verdict, error, appeal. Clark and Marshall on Criminal Law; lectures; selected cases; drawing indictments. Burdick.

3.—CONTRACTS. First semester, daily, at 9:30. The formation of contracts; offer and acceptance; form and consideration; capacity of parties; reality of consent; legality of objects; operation of contracts; limits of contractual obligations; assignment of contracts; discharge of contracts, by agreement, by performance, by breach, by operation of law. Clark, Benjamin, and Messing's Cases. Green.

4.—AGENCY. First semester, second half, daily, at 10:30. Creation and termination of relation; evidence of appointment; ratification; construction of authorizations; execution of authority; rights, duties, and liabilities of principal, agent, and third party *inter se*; particular classes of agents. Mechem's Outline and Cases on Agency. Humble.

5.—TORTS. First semester, second half, Tu. Th., at 11:30; second semester, first half, M. W. F., at 9:30. General principles of liability in tort; intent and negligence; proximate cause; active misconduct and tortious omissions; liabilities of persons occupying certain relations; deceit; defamation; justification and excuse; contributory negligence. Bohlen's Cases on Tort. Osborn.

6.—SALES. First semester, second half, daily, at 10:30. Sales distinguished from kindred contracts; formation of the contract; effects of the contract; avoidance of the contract; performance of the contract; rights of unpaid seller against the goods, including lien and stoppage *in transitu*; remedies upon breach of the contract. Burdick's (W. L.) Cases on Sales. Burdick.

7.—BAILMENTS AND CARRIERS. Second semester, first half, daily, at 11:30. Bailments; carriers of goods; carriers of passengers; duty to serve; liability of carriers for loss or injury, for delay, for misdelivery; limitation of liability; tickets and bills of lading; freight; connecting carriers. Green's cases on Carriers. Osborn.

8.—SURETYSHIP. Second semester, second half, daily, at 9:30. Forms of suretyship; essentials of the contract; statute of frauds; exoneration; reimbursement; subrogation; contribution; defenses and discharge of surety. Henning's Cases on Suretyship. Osborn.

9.—DAMAGES. Second semester, second half, daily, at 10:30. *Damnum absque injuria*; nominal damages; liquidation of damages; aggravation and mitigation; exemplary damages; compensatory damages; nonpecuniary losses; damages in specific actions. Mechem and Gilbert's Cases. Sedgwick's Text. Humble.

10.—DOMESTIC RELATIONS, OR FAMILY LAW. Second semester, second half, daily, at 11:30. Husband and wife; marriage; effect of marriage;

statutory modifications of the common law; the wife's separate property; Community property; separation and divorce. Parent and child; parental rights and duties; filial duties. Guardian and ward: common-law, chancery, and statutory guardians; rights and duties of guardians; management and sale of the ward's property; guardian's accounts. Infants: general principles governing the contracts, torts, crimes, and general juristic capacity of minors. Master and servant; general principles. Lectures: Woodruff's Cases. Burdick.

11.—PRACTICE COURT. First and second semesters, F., at 1:30. (For synopsis see *supra* in this announcement.) Higgins.

SECOND-YEAR COURSES.

12.—COMMON-LAW PLEADING. First semester, first half, daily, at 8:30. The development of courts and of systems of pleading; an analytical and historical study of remedies at common law, including ancient modes of trial; forms of actions; parties to actions; order of proceeding; pleadings; production of issue; forms of traverse; demurrers; materiality, unity and certainty in pleading. Case book. Higgins.

13.—INSURANCE. First semester, first half, daily, at 9:30. The theory of insurance with reference to fire, marine, accident, and life risks; the legal relation of the parties to the insurance contract examined historically and critically, with a view to developing the fundamental principles of the contract and the law merchant underlying it; interpretation and construction of the standard policies. Wambaugh's Cases; Humble's Text. Humble.

14.—EQUITY. First semester, M. W. F., at 11:30. Nature of equity jurisdiction; specific performance of contracts; relief for and against third persons; incidents of the right to specific performance; bills for an account; relief against torts; bills of interpleader; bills *quia timet*; reformation and rescission for mistake. Ames' Cases on Equity Jurisdiction. Osborn.

15.—EQUITY PLEADING. First semester, second half, daily, at 8:30. Equity courts; parties; bills; multifariousness and impertinence; nature and office of demurrers, pleas, answers and replications; decrees; petitions for rehearing and bills of review; modifications by the new federal equity rules. Cases on Equity Pleadings, and the New Federal Equity Rules. Higgins.

16.—QUASI CONTRACTS. First semester, second half, daily, at 10:30. Origin and nature of quasi contracts; distinguished from contracts and torts; right of recovery upon a record; right of recovery upon a statutory, official, or customary duty; right of recovery upon unjust enrichment; general principles governing unjust enrichment, including money paid under mistake, constraint, duress, or compulsion. Woodruff's Cases on Quasi Contracts. Burdick.

17.—BILLS AND NOTES. Second semester, M. W. F., at 8:30. The law merchant; delivery; form and requisites; maker's contract; acceptor's contract; certified paper; drawer's contract; indorser's contract; presentment and demand; notice; protest; accommodation parties; right of holder; defenses; payment. Bigelow's Cases on Bills, Notes, and Cheques. Humble.

18.—TRUSTS. Second semester, Tu. Th., at 8:30. Trusts distinguished from other legal relationships; language necessary to create; consideration; statute of frauds; subject matter of trusts; nature of *cestui's* interest; transfer of trust *res*; extinguishment; duties of trustee. Ames' Cases on Trust (2d ed.). Humble.

19.—EVIDENCE. Second semester, daily, at 10:30. The nature and principles of evidence; the rules which govern the production of testimony; instruments of evidence. Hughes on Evidence; Wigmore's Cases. Green.

20.—CODE PLEADING. Second semester, first half, daily, at 10:30. Its relation to the common-law and equity systems; parties; splitting and joinder of causes of action; general rules of pleading; contents of complaint or petition, answer, and reply; nature and office of demurrers, motions, and bills of particulars; amendments; construction of pleadings. Sunderland's Cases. Higgins.

21.—CONFLICT OF LAWS. Second semester, second half, daily, at 10:30. General rules; domicile; capacity; property; obligations; family law; inheritance; foreign administrations. Lorenzen's Cases on Conflict of Laws. Osborn.

22.—PRACTICE COURT. First and second semesters, M. W., at 1:30. (For synopsis see *supra* in this announcement.) Higgins.

THIRD-YEAR COURSES.

23.—REAL PROPERTY. First semester, M. W. Th., at 9:30; second semester, first half. Nature of real property and tenure thereof; feudal land law. Rights in real property; estates; law of landlord and tenant. Liens upon real property. Acquisition and transfer of real property title in general; powers; deeds and their requisites; abstracts of title. Burdick's Text and Cases on Real Property; practice in conveyancing; examination of abstracts of title. Burdick.

24.—ROMAN LAW. First semester, F., at 9:30; second semester, first half. History and sources; the Twelve Tables; codification; law of persons; law of things; law of actions; criminal law of Rome; modern development of Roman law into the civil law of Europe and America. Institutes of Justinian; Howe's Studies in the Civil Law; lectures. Burdick.

25.—CORPORATIONS. First semester, daily, at 10:30. Legal conception of a corporation; corporations *de jure* and *de facto*; corporate powers; *ultra vires* acts; subscriptions to stock; directors; stockholders; creditors; promoters; dissolution. Canfield and Wormser's Cases on Private Corporations. Osborn.

26.—BANKRUPTCY. First semester, second half, Tu. Th., at 11:30. Jurisdiction; who may be bankrupts; petitioning creditors; acts of bankruptcy; property which passes to trustee; provable claims; duties of bankrupt and trustee; protection, exemptions, and discharge of bankrupt. Williston's Cases on Bankruptcy. Humble.

27.—PARTNERSHIP. Second semester, first half, daily, at 10:30. Formation of a partnership; partnership as to third persons; nature of a partnership; power of partners; rights and remedies of creditors; duties and liabilities of partners; dissolution of partnership; accounting and distribution; limited partnerships. Gilmore's Cases on Partnership. Humble.

28.—CONSTITUTIONAL LAW. Second semester, daily, at 11:30. General principles governing the federal and state constitutions; construction and interpretation; taxation; police power; eminent domain; civil rights; constitutional guaranties; respective powers of state and federal governments in the regulation of commerce; laws impairing the obligation of contracts; *ex post facto* laws and retroactive laws. Hall's Cases. Green.

29.—WILLS. Second semester, second half, daily, at 10:30. History and form; capacity to make a will; effect of mistake; fraud, undue in-

fluence; execution; revocation; rules of construction; legacies; probate of wills; duties of executors. Gardner on Wills; selected cases.

Burdick.

30.—PRACTICE COURT. First and second semesters, Tu. Th., at 1:30. (For synopsis see *supra* in this announcement.)

Higgins.

COURSE FOR MINING ENGINEERING STUDENTS.

MINING LAW. A course outlining the laws relating to the mining industries. Lectures and recitation, one hour per week, second semester, in alternate years. (Given in 1916-'17.) Costigan's Cases on Mining Law. Mining engineering students must take this course before graduating.

Humble.

SECTION VII.
School of Pharmacy.

(275)

FACULTY.

FRANK STRONG, Ph. D., President.
LUCIUS E. SAYRE, Ph. M., Dean, and Professor of Pharmacy and Materia Medica.
EDGAR H. S. BAILEY, Ph. D., Professor of Chemistry.
ERASMUS HAWORTH, Ph. D., Professor of Geology and Mineralogy.
WILLIAM C. STEVENS, M. S., Professor of Botany.
EUGENIE GALLOO, A. M., Professor of Romance Languages and Literatures.
L. D. HAVENHILL, Ph. M., Secretary, and Professor of Pharmacy and Pharmaceutical Chemistry.
FREDERICK E. KESTER, Ph. D., Professor of Physics.
HAMILTON P. CADY, Ph. D., Professor of Chemistry.
JOHN SUNDWALL, M. D., Professor of Anatomy.
FREDERICK H. BILLINGS, Ph. D., Professor of Bacteriology.
SAMUEL A. MATTHEWS, M. D., Professor of Physiology and Experimental Pharmacology.
FRANK B. DAINS, Ph. D., Professor of Chemistry.
ELMER F. ENGEL, A. M., Professor of German.
JOHN N. VAN DER VRIES, Ph. D., Professor of Mathematics.
WILLIAM A. WHITAKER, Ph. D., Associate Professor of Metallurgy.
GEORGE E. COGHILL, Ph. D., Associate Professor of Anatomy.
FREDERICK N. RAYMOND, A. M., Associate Professor of English.
HERMAN C. ALLEN, Ph. D., Associate Professor of Chemistry.
C. FERDINAND NELSON,* Ph. D., Associate Professor of Physiological Chemistry.
ULYSSES G. MITCHELL, Ph. D., Associate Professor of Mathematics.
CHARLES M. STERLING, A. B., Assistant Professor of Pharmacognosy.
GEORGE N. WATSON, Ph. C., Assistant Professor of Pharmacy, in charge of Drug Laboratory.
CLIFFORD C. YOUNG, A. B., Assistant Professor of Chemistry and Director of State Water Survey.
PAUL V. FARAGHER, Ph. D., Assistant Professor of Chemistry.
WALTER S. LONG, A. M., Assistant Professor of Chemistry, in charge of Food Laboratory.
GEORGE W. STRATTON, Ph. D., Assistant Professor of Chemistry.
JAMES LISLE WILLIAMS, A. M., Instructor in Biological Chemistry.
FRANK J. ZUCK, Ph. G., Assistant Professor of Pharmacy.
FREDERICK ORVILLE BLAYLOCK, Ph. C., Assistant in Drug Laboratory.

ADMINISTRATIVE COMMITTEE.

L. E. SAYRE, *Chairman.*

L. D. HAVENHILL.

CHAS. M. STERLING.

* Absent on leave.

The School of Pharmacy.

PURPOSE AND ORGANIZATION.

The School of Pharmacy of the University of Kansas was established by legislative enactment in 1885. The purpose of the School is to give instruction and practical training in all branches connected with the science and art of pharmacy.

The three general divisions of instruction embrace pharmacy, theoretical and practical; chemistry, general and analytical, the latter including pharmaceutical chemistry; and materia medica, including its subdivisions of botany (systematic and histologic), pharmacognosy (macroscopic and microscopic), therapeutics, and toxicology.

DEGREES.

The School offers three curricula of two, three, and four years, leading, respectively, to the following degrees: Graduate in Pharmacy; Pharmaceutical Chemist; Bachelor of Science.

ADMISSION.

There are two methods of admission to the School of Pharmacy: First, by examination; second, by certificate.

1. BY EXAMINATION. Time and place of examination for subjects required for admission to the School of Pharmacy are the same as for admission to the College. For schedules, see General Information Section, p. 49.

2. BY CERTIFICATE. Candidates for admission to the two-, three- and four-year courses must comply with the requirements for admission to the College, viz.: four years of approved high-school work, except that students of mature years who have had two or more years' drug-store experience may be allowed credit on some of the required high-school work. For details write to the Secretary of the Faculty.

Students having entrance deficiencies are required to remove them during the first year.

SPECIAL STUDENTS. Students over twenty-one years of age, not candidates for a degree, are admitted to such courses as, in the judgment of the Faculty, they can pursue with profit. It is hoped that pharmacists throughout the state who wish to increase their efficiency will avail themselves of the opportunities here offered.

REGISTRATION.

All candidates for admission having certificates from accredited schools and all students of the University intending to pursue their studies during the ensuing year must present themselves for registration at the University on September 17, 18, or 19, 1917.

Registration at a later date will be permitted only on the payment of a fee of one dollar.

ENROLLMENT.

After registration has been completed with the Registrar, and after fees have been paid, students should apply to the Dean for enrollment in their classes. Enrollment the first semester occurs September 18 and 19, 1917, and on the first day of the second semester.

Enrollment at a later date will be permitted only on the payment of a fee of one dollar.

FEES AND EXPENSES.

Matriculation fee, for residents of the state.....	\$5.00
for nonresidents of the state.....	10.00
Incidental fee, for residents of the state, per year.....	25.00
for nonresidents of the state, per year.....	35.00
Diploma fee	5.00

In addition to the above fees students pay for the material used and the apparatus broken in the various laboratory courses. This varies with the economy of the student. It ranges from \$12 to \$15 for the first year and from \$23 to \$25 for the second year.

REGISTRATION—STATE BOARD OF PHARMACY.

Graduates of the School of Pharmacy may become registered pharmacists in Kansas without examination upon presenting to the State Board of Pharmacy satisfactory evidence of having had the following amount of practical experience in drug stores where physician's prescriptions are compounded:

Thirty months for graduates of the two-year course.

Twenty-one months for graduates of the three-year course.

Twelve months for graduates of the four-year course.

For detailed information apply to the State Board of Pharmacy.

POSITIONS FOR GRADUATES.

An adjunct to the Pharmaceutical Society has been established, of which the aim is to secure positions for graduates and clerks for employers who are graduates of the School. At present the demand for clerks is greater than the supply. Applications for positions should be placed with the Secretary of the Faculty.

EQUIPMENT.

The School of Pharmacy occupies the first two floors and basement of the east wing of the Chemistry and Pharmacy Building. The building is arranged specifically for laboratory purposes for the departments of chemistry and pharmacy.

Laboratory instruction for pharmacy students is also given in the laboratories of the following departments: Chemistry, bacteriology, botany, mineralogy, physiology, and physics.

APPARATUS. For the various practical courses offered by this School a large amount of laboratory apparatus of domestic and foreign types is supplied. The various laboratories are equipped for manufacturing purposes, so that any preparation of the United States Pharmacopœia can be made by any of the official methods; and, in addition, appliances and materials are at hand for the unofficial and extra-pharmacopœial products.

The lecture table is abundantly supplied with illustrative apparatus, so that the student may see before him the various processes in operation which may be carried on in the laboratories and at the prescription counters. Care has been taken to illustrate pharmacy in all its phases.

COLLECTIONS. The pharmacy School possesses an extensive herbarium of medical plants, together with a collection of photographs representing nearly 200 species. This, in conjunction with the large herbarium of the botanical department, is available to students. Several hundred microscope slides are at hand for use with the projection lantern, showing various drugs in cross and longitudinal sections, as well as in powdered form; also a large assortment of lantern slides, illustrating plants, drugs, prescriptions, pharmacies, and places and subjects of pharmaceutical interest; several cases of crystal models; an extensive collection of official and unofficial salts, alkaloids, drugs and medicines, besides numerous smaller collection of particular interest.

LIBRARY. The School possesses an extensive library, and is the regular recipient of the leading pharmaceutical journals and periodicals of America, England, Germany, and France.

For the convenience of students in chemistry and pharmacy a branch library is provided in the building and adjacent to the chemical and pharmaceutical laboratories, where the principal reference books and periodicals may be found.

THE CURRICULUM.

Three definite curricula are provided:

THE TWO-YEAR CURRICULUM is confined to pharmaceutical work and is designed to meet the requirements of those students who have had one or more years of experience in a drug store and who wish to further qualify themselves for the work of the retail pharmacy.

THE THREE-YEAR CURRICULUM is especially recommended to those students who have had no drug-store experience, and to those who desire a broader course of training than that afforded by the two-year course. Special opportunities are offered in this course for work in the field of drug standardization and analysis.

THE FOUR-YEAR CURRICULUM prepares the student for graduate work. It is especially recommended to all who aim to be food and drug analysts, municipal chemists, biological chemists, sugar chemists, etc.; and allows a liberal choice of electives in the physical, chemical, and biological groups.

Connected with the School of Pharmacy is the state laboratory for drug analysis, which affords unusual opportunities for those who are especially interested in governmental and state positions.

Choice of Electives should be tentatively made and submitted to the Faculty by the beginning of the Junior year.

Requirements for Graduation. Students desiring to graduate from the four-year curriculum are required to be in residence and regularly registered in the School of Pharmacy during their Senior year, and to have completed the prescribed courses of study with a minimum of 130 hours total credit, including electives, and with grade of I or II at least 80 hours.

TWO-YEAR SCHEDULE.

FIRST YEAR.

<i>Course.</i>	<i>Time.</i>	<i>Hours credit.†</i>
FIRST SEMESTER.		
Introductory Pharmacy	9:30-10:30, Tu., Th.	2
Pharmaceutical Arithmetic	9:30-10:30, M., W., F.	3
Pharmaceutical Botany	10:30-12:30	5
Elementary Chemistry*	1:30- 3:30	5

SECOND SEMESTER.

Pharmacognosy	8:30-10:30	5
Official Pharmacy	10:30-11:30, Tu., Th.	2
Inorganic Medicinal Chemicals.....	10:30-12:30, M., W.	
	11:30-12:30, F.	3
Qualitative Analysis	1:30- 3:30	5

SECOND YEAR.

FIRST SEMESTER.

Pharmaceutical Chemistry	8:30-10:30, Tu., Th.	2
Quantitative Analysis	9:30-11:30, M., W., F.	3
Materia Medica I.	11:30-12:30, M., Tu., Th.	3
Manufacturing Pharmacy	1:30- 4:30	8

SECOND SEMESTER.

Prescription Practice	8:30-10:30 (a)	2
Physiology and Pharmacology	8:30-10:30 (b)	3
Materia Medica and Pharmacology II.	10:30-11:30, M., Tu., W., Th.	4
Toxicology	11:30-12:30, F.	1
Drug Store Management.....	11:30-12:30, Tu.	1
General Review of Pharmacy.....	11:30-12:30, Th.	1
Organic Chemistry	1:30- 3:30	5

* Students presenting chemistry for entrance are required to elect in place of Chemistry I, 5 hours from the physical science group. Chemistry II is recommended.

† CREDIT HOUR. A credit hour requires, for a student of average ability, fifty minutes in lecture or recitation and two hours in preparation, or one hour and fifty minutes in laboratory and one hour in preparation, or two hours and fifty minutes of straight laboratory work not requiring outside preparation, per week for one semester.

THREE-YEAR SCHEDULE.

FIRST YEAR.

FIRST SEMESTER.

<i>Course.</i>	<i>Time.</i>	<i>Hours credit.</i>
Rhetoric I	8:30- 9:30, M., W., F.....	3
Introductory Pharmacy	9:30-10:30, Tu., Th.	2
Pharmaceutical Botany	10:30-12:30	5
Elementary Chemistry*	1:30- 3:30	5

SECOND SEMESTER.

Pharmacognosy	8:30-10:30	5
Rhetoric II	8:30- 9:30, Tu., Th.	2
Inorganic Medicinal Salts.....	10:30-12:30, M., W.	5
	11:30-12:30, F.	3
Qualitative Analysis	1:30- 3:30	5

SECOND YEAR.

FIRST SEMESTER.

Pharmaceutical Chemistry	8:30-10:30, Tu., Th.	2
Pharmaceutical Arithmetic	9:30-10:30, M., W., F.....	3
Quantitative Analysis	10:30-12:30, M., W., F.....	3
Bacteriology	1:30- 3:30	5
German I	3:30- 4:30	5

SECOND SEMESTER.

Elective†	8:30-10:30	5
Official Pharmacy	10:30-11:30, Tu., Th.	2
German II	11:30-12:30	5
Organic Chemistry	1:30- 3:30	5

THIRD YEAR.

FIRST SEMESTER.

Microanalysis of Drugs and Spices.....	8:30-10:30	5
Materia Medica	11:30-12:30, M., Tu., Th....	3
Manufacturing Pharmacy	1:30- 4:30	8

SECOND SEMESTER.

Prescription Practice (a).....	8:30-10:30	2
Physiology (b)	8:30-10:30	3
Materia Medica	10:30-11:30, M., Tu., W., Th.,	4
Toxicology	11:30-12:30, F.	1
Drug Store Management.....	11:30-12:30, Tu.	1
General Review	11:30-12:30, Th.	1
Elective†	1:30- 3:30	5

FOUR-YEAR SCHEDULE.

FRESHMAN YEAR.

FIRST SEMESTER.

<i>Course.</i>	<i>Time.</i>	<i>Hours credit.</i>
Introductory Pharmacy	9:30, Tu., Th.	2
Rhetoric I	9:30, M., W., F.....	3
Pharmaceutical Botany	10:30-12:30	5
Elementary Chemistry*	1:30- 3:30	5

SECOND SEMESTER.

German I or French I.....	8:30	5
Rhetoric 2	9:30, Tu., Th.	2
Official Pharmacy	10:30, Tu., Th.	2
Mathematics 2	10:30, M., W., F.....	3
Qualitative Analysis	1:30- 3:30	5

SOPHOMORE YEAR.

FIRST SEMESTER.

German 2 or French 2.....	8:30	5
Pharmaceutical Arithmetic	9:30, M., W., F.....	3
Mathematics 3	9:30, Tu., Th.	2
Quantitative Analysis	10:30-12:30	5

SECOND SEMESTER.

Pharmacognosy	8:30-10:30	5
Inorganic Medicinal Chemicals.....	10:30-12:30, M., W., F.....	3
Organic Chemistry	1:30- 3:30	5
Elective† .....	.....	5

* Students presenting chemistry for entrance are required to elect in place of Chemistry I, 5 hours from the physical science group. Chemistry II is recommended.

† In the choice of electives the student is required to confer with his faculty adviser.

‡ A student may not elect more than eighteen hours in each semester without special permission from the Faculty. Choice of electives should be tentatively made and submitted to the Faculty by the beginning of the Junior year.

JUNIOR YEAR.

FIRST SEMESTER.

<i>Course.</i>	<i>Time.</i>	<i>Hours credit.</i>
Elective†		5
German 3 or French 3	9:30	5
Materia Medica I.	11:30-12:30, M., W., Th.	3
Bacteriology I	1:30- 3:30	5

SECOND SEMESTER.

Elective†		5
Organic Materia Medica and Pharmacology II.	10:30-11:30, M., Tu., W., Th.,	4
Toxicology	11:30-12:30, F.	1
Physics 5 (b)	1:30- 3:30, Tu., Th.	2
Physics 5 (a)	2:30, M., W., F.	3

SENIOR YEAR.

FIRST SEMESTER.

Elective†		10
Thesis	10:30	..
Manufacturing Pharmacy	1:30- 4:30	8

SECOND SEMESTER.

Prescription Practice (a)	8:30-10:30	2
Elective*		7
Biological Chemistry	1:30- 4:30	4 or 6
Completion of Thesis.		..

* Students presenting chemistry for entrance are required to elect in place of Chemistry I, 5 hours from the physical-science group. Chemistry II is recommended.

† In the choice of electives the student is required to confer with his faculty adviser.

‡ A student may not elect more than eighteen hours in each semester without special permission from the Faculty. Choice of electives should be tentatively made and submitted to the Faculty by the beginning of the Junior year.

DESCRIPTION OF COURSES.*

ANATOMY.

Professors: SUNDWALL, COGHILL.

M7.—HISTOLOGY AND SPLANCHNOLOGY. Five hours credit.
Coghill and assistants.

BACTERIOLOGY.

Professor: BILLINGS.
Associate Professor: SHERWOOD.
Assistant Professor: CLAWSON.
Director of Water Survey: YOUNG.
Instructor: MILLIGAN.

50.—GENERAL BACTERIOLOGY. Five hours credit. Both semesters; first semester, two sections, 10:30 to 12:30, and 1:30 to 3:30; second semester, 8:30 to 10:30, and 10:30 to 12:30. Lectures and laboratory work. The lectures are largely illustrated, and treat problems connected with general bacteriology and with the relation of bacteria to public health. The laboratory work deals with the preparation of media, with cultural methods, and with diagnostic tests. Prerequisite, chemistry 1, or equivalent. Fee, \$5. Billings, Sherwood, Milligan.

53.—BACTERIOLOGY OF FOODS. Five hours credit. Second semester, 1:30 to 3:30. Examination of milk, oysters, meats, etc. Reviews of literature pertaining to food bacteriology. Prerequisite, course 50. Fee, \$5. Milligan.

54.—SPECIAL METHODS IN BACTERIOLOGY. Five hours credit. First semester, 10:30 to 12:30. The laboratory work embraces the use of special media, the preparation of vaccines, and diagnostic technic such as that used in a public-health laboratory. Methods in sanitary water analysis constitute a part of the course. Prerequisite, course 50. Fee \$5. Sherwood.

55.—BACTERIOLOGY OF SOILS. Two hours credit. Second semester, 1:30 to 3:30. A laboratory study of the influence exerted by bacteria on the composition of soil. Milligan.

56.—ADVANCED WATER ANALYSIS. Three hours credit. Second semester, 8:30 to 10:30. Laboratory study and assigned reading. Special attention is given to the bacteriology of water purification. The course will include a study of the organisms that produce water-borne diseases. Young.

57.—IMMUNITY. Five hours credit. Second semester, 1:30 to 3:30. Laboratory work comprises a study of precipitins, agglutinins, bacteriolysins, antitoxins, anaphylaxis, and complement fixation. Prerequisite, course 50. Fee, \$5. Sherwood.

* C., E. or M., before the number of the course indicates that it is offered by the College, School of Engineering, or School of Medicine, respectively.

Courses numbered from 1 to 49 are Freshman and Sophomore courses; from 50 to 99 are Junior and Senior courses; from 100 to 149 are offered only in the Graduate School; from 150 to 200 are Junior and Senior as well as Graduate courses.

DAYS OF MEETINGS. Courses giving five hours credit meet daily from Monday to Friday, inclusive.

Courses giving three hours credit meet on Monday, Wednesday, and Friday, unless otherwise specified.

Courses giving two hours credit meet on Tuesday and Thursday, unless otherwise specified.

58.—**PATHOGENESIS.** Five hours credit. First semester, 8:30 to 10:30. A detailed study of lesions caused by bacteria. Prerequisites, course 50 and animal histology. Offered in 1918-'19. Fee, \$5. Clawson.

61.—**SPECIAL PROBLEMS IN BACTERIOLOGY.** Two to ten hours credit. Either semester, by appointment. Special work along some definite line, with a view to obtaining familiarity with a particular kind of laboratory procedure. Prerequisite, course 50. Fee, \$1, for each hour of enrollment. Billings and the instructor directly concerned.

BIOCHEMISTRY.

Associate Professor: NELSON.
Instructor: WILLIAMS.

50.—**BIOLOGICAL CHEMISTRY.** Four or six hours credit. Second semester, M. W., 1:30 to 4:30; F., 1:30 to 5:30, Tu. Th., 1:30 to 2:30. A course embracing a fundamental study of the chemistry of epithelial, connective, muscular, and nervous tissues. A study of enzymes and enzyme action, proteins, fats and carbohydrates. The qualitative and quantitative composition of milk, saliva, blood, bile, peptic and pancreatic juices. Designed to meet the needs of pharmacists and those pursuing courses in food analysis, hygiene, and home economics. Required in the four-year pharmacy course. Open as elective for others having necessary prerequisites. Nelson, Williams.

52.—**URINALYSIS.** Two hours credit. Elective. Second semester, hours by appointment. The qualitative and quantitative examination of normal and pathological urine. Nelson, Williams.

51.—**ADVANCED BIOLOGICAL CHEMISTRY.** Two or more hours credit. Throughout the year. Conferences and reports on selected topics. Nelson.

53.—**COLLOID CHEMISTRY.** Two hours credit. First semester. A study of colloids and the colloidal state of matter. Special emphasis is laid on the applications of colloid chemistry to problems in biochemistry. Nelson.

101.—**RESEARCH IN BIOLOGICAL CHEMISTRY.** Two or more hours credit. Throughout the year. Nelson.

102.—**BIOCHEMICAL SEMINAR.** Weekly meetings. Prerequisites, a reading knowledge of French and German. Discussion and reports on current biochemical literature. Nelson.

BOTANY AND PHARMACOGNOSY.

Professors: SAYER, STEVENS.
Assistant Professor: STERLING.

1.—**PLANT HISTOLOGY AND GENERAL MORPHOLOGY.** Five hours credit. First semester, 10:30 to 12:30. A study of plant tissues, histological technique; the general forms of the flowering plants, and the preparation and preservation of specimens. Laboratory work, lectures, and recitations. Sterling.

2.—**PHARMACOGNOSY.** Five hours credit. Second semester; M. W. F., 8:30 to 10:30; Tu. Th., 9:30 to 10:30. An introduction to taxonomy; a study of the geographical distribution, origin and physical characteristics of crude vegetable drugs, and elementary technique in the examination of powdered drugs. Laboratory work, lectures, and recitations. Prerequisite, course 1 or course 6. Sterling.

51.—**MICROANALYSIS OF POWDERED DRUGS AND FOODS.** Five hours credit. First semester, 8:30 to 10:30. Methods in sectioning and staining, the preparation of powders, and microscopical examination. Laboratory work, lectures, and recitations. Prerequisite, course 2. Sterling.

52.—ADVANCED WORK IN MICROANALYSIS OF DRUGS AND FOODS. Two, three, or five hours credit. First or second semester, by appointment. A course designed to meet the needs of students preparing to be drug and food analysts. Method in plant histology; microchemical technique, and quantitative determination of adulterants. Laboratory work and recitations. Sterling.

C2.—THE LIVING PLANT, WHAT IT TEACHES ABOUT LIFE AND ITS USES. Five hours credit. First semester. Stevens.

C4.—PLANT HISTOLOGY. Five hours credit. First semester. Prerequisites, course 1 in the College, course 2 in the College, course 1 in the School of Pharmacy, or its equivalent. Stevens.

CHEMISTRY.

Professors: BAILEY, CADY, DAINS, WHITAKER.

Associate Professor: ALLEN.

Assistant Professors: YOUNG, FARAGHER, STRATTON, LONG, BRUCKMILLER.

1.—ELEMENTARY CHEMISTRY. Five hours credit. First semester, 10:30 to 12:20 or 1:30 to 3:30; second semester, 10:30 to 12:20. Recitations, lectures, and laboratory work. Students presenting chemistry for admission to the College are not admitted to this course.

Stratton and assistants.

2.—INORGANIC CHEMISTRY. Five hours credit. First semester. Lectures and recitations, M. W. F., 8:30 or 9:30. Laboratory, Tu. Th., 8:30 to 10:30, or 1:30 to 3:30. Prerequisite, course 1.

Cady, Faragher, and assistants.

3.—INORGANIC CHEMISTRY AND QUALITATIVE ANALYSIS. Five hours credit. Second semester. Lectures and recitations, Tu. Th., 8:30 or 9:30. Laboratory, M. W. F., 8:30 to 10:30, or 1:30 to 3:30. Prerequisite, course 2.

Cady, Faragher, and assistants.

6.—INORGANIC CHEMISTRY AND QUALITATIVE ANALYSIS. Five hours credit. Second semester, laboratory, M. W. F., 1:30 to 3:30; recitation, Tu. Th., 1:30. Open only to pharmacy students. Prerequisite, course 1.

Bruckmiller.

50.—QUANTITATIVE ANALYSIS. Three hours credit. First semester, 10:30 to 12:30. Open only to pharmacy students. Prerequisites, courses 1 and 6.

Allen.

51.—QUANTITATIVE ANALYSIS I. Two, three, or five hours credit. Both semesters, 10:30 to 12:30, or 1:30 to 3:30. A general course covering the fundamental principles of gravimetric and volumetric analyses. Prerequisite, course 3.

Allen and assistants.

52.—QUANTITATIVE ANALYSIS II. Two, three, or five hours credit. Both semesters, 1:30 to 3:30, or by appointment. In connection with this work some specialty, such as cement, glass, or packinghouse industry, rock analysis, paint analysis, etc., may be pursued. Prerequisite, course 51.

Allen and assistants.

52A.—SANITARY WATER ANALYSIS. Three hours credit. Second semester, 10:30 to 12:30. Laboratory work in the sanitary analysis of water and sewage. Lectures and assigned readings on the interpretation of results and upon the methods used. Especially designed to fit students for commercial positions in this line of work. Prerequisite, course 51.

Bruckmiller.

52C.—GAS ANALYSIS. Two hours credit. First semester, by appointment. A laboratory course of general gasometric methods, analysis of flue gases, artificial and natural gases. Prerequisite, course 51.

Allen.

52D.—FOOD ANALYSIS. Three hours credit. Both semesters, by appointment. Lectures and laboratory. Prerequisites, courses 51 and 61, or 62.

Long.

52E.—OIL ANALYSIS. Two hours credit. First semester, by appointment. The examination of petroleum and products, lubricating oils, asphalts, and road materials. Prerequisite, course 51. Allen.

52G.—THE CHEMISTRY OF MILLING AND BAKING. Two hours credit. Second semester, by appointment. Designed to meet the requirements of chemists desiring to carry on control work in the milling industry. Prerequisites, courses 51 and 61, or 62. Estes.

52H.—INDUSTRIAL ORGANIC ANALYSIS. Two hours credit. Second semester, by appointment. Includes analyses of soap, paper, leather, starches, etc. Prerequisites, courses 51 and 61, or 62. Estes.

54.—SANITARY WATER ANALYSIS. Five hours credit. First semester, 8:30 to 10:30. Students electing this course must first consult the Department of Pharmacy. Bacteriological technic and reading along general lines, followed by special work on the bacteriology of water and sewage; also chemical quantitative analysis of water and sewage and interpretation of results of sanitary tests. Young.

60.—CHEMISTRY OF FOOD PRODUCTS. Five hours credit. Second semester, 3:30 to 5:30. A general course for students interested in food supply. It includes a study of the source, composition, adulteration, and use of foods. Special attention is also given to the world's supply of foods, and its manufacture and preparation for the market. Prerequisite, course 1. Bailey.

61.—ELEMENTARY ORGANIC CHEMISTRY. Five hours credit. Both semesters, 1:30 to 3:30. Designed to cover briefly the aliphatic and aromatic series, to discuss the more important derivatives and to show their relationships and applications. Prerequisite, ten hours chemistry. Dains.

62.—ORGANIC CHEMISTRY I. Five hours credit. First semester, M. W. F., at 9:30. Laboratory, Tu. and Th. mornings or afternoons. For College and Engineering students who wish a more detailed knowledge of organic chemistry. In this course the aliphatic series only is discussed, the aromatic series being reserved for organic chemistry 63. Prerequisite, ten hours chemistry. Dains.

63.—ORGANIC CHEMISTRY II. Five hours credit. Second semester, M. W. F., at 9:30. Laboratory, Tu. and Th. mornings or afternoons. Aromatic series. Prerequisite, course 62. Dains.

70.—PHYSICAL CHEMISTRY I. Five hours credit. First semester, at 10:30. A course paying special attention to electrochemistry. Lectures, recitations, and laboratory work. Prerequisites, course 3 and satisfactory preparation in general physics and calculus. Cady.

71.—PHYSICAL CHEMISTRY II. Five hours credit. Second semester, at 10:30. A general course in theoretical and physical chemistry. Lectures, recitations, and laboratory work. Prerequisites, courses 1, 2, 3, 51, 61 or 62, and satisfactory preparation in general physics and calculus. Cady.

80.—INORGANIC INDUSTRIAL CHEMISTRY. Three hours credit. Second semester, at 11:30. A study of the inorganic industries, including such topics as the manufacture of acids, alkalis and other chemicals, fertilizers, paints and pigments, glass and cement, and the purification of water. Prerequisites, courses 1, 2, and 3. Whitaker.

81.—ORGANIC INDUSTRIAL CHEMISTRY. Three hours credit. First semester, at 9:30. A study of the organic industries, including such topics as the refining of petroleum, the distillation of wood and coal, packing houses, fermentation, soaps, leather, paper, starches, sugars, dye-stuffs, etc. Prerequisites, courses 1, 2, 3, and 61 or 62. Whitaker.

ENGLISH LANGUAGE AND LITERATURE.

Associate Professor: RAYMOND.*Instructors:* LAIRD, HANLEY.

E1.—RHETORIC I. Three hours credit. Both semesters.
Raymond, Laird, Hanley.

E2.—RHETORIC II. Two hours credit. Second semester, at 8:30.
Raymond, Laird, Hanley.

59.—ADVANCED COMPOSITION. Three hours credit. Both semesters;
first semester at 8:30 and 9:30. Practice in gathering and analyzing
material, and in the presenting of information and opinion in written
papers. Elective in Junior or Senior year. Raymond.

FRENCH.

Professor: GALLOO.*Associate Professor:* NEUENSCHWANDER.*Assistant Professors:* COWPER, SKIDMORE, STANTON.*Instructors:* GARDNER, APPELBOOM.

1.—ELEMENTARY FRENCH I. Five hours credit. Both semesters.
NeuenSchwander, Cowper, Skidmore, Stanton, Appelboom.

2.—READING AND GRAMMAR. Five hours credit. Both semesters. A
continuation of course 1.

NeuenSchwander, Cowper, Skidmore, Stanton, Appelboom.

5.—SCIENTIFIC FRENCH. Three hours credit. First semester, by ap-
pointment. Open to students who are specializing in the sciences and
who need an accurate and ready understanding of scientific French. Pre-
requisites, courses 1 and 2. Gardner.

51.—ELEMENTARY FRENCH I. Five hours credit. First semester,
10:30. For Juniors and Seniors who are beginning French. Galloo.

52.—FRENCH READING AND GRAMMAR. Five hours credit. Second
semester. A continuation of course 51. Galloo.

GEOLOGY.

Professor: HAWORTH.*Assistant Professors:* TODD, MOORE, HAYNES.

1.—ELEMENTARY GEOLOGY. Five hours credit. Both semesters.
Todd, Moore, Haynes.

GERMANIC LANGUAGES AND LITERATURES.

Professors: ENGEL, THURNAU.*Associate Professors:* CORBIN, KRUSE.*Assistant Professors:* BRIGGS,* STURTEVANT, JONES, PALMBLAD.*Instructors:* WILSON, SPANGLER, HOCHDÖRFER, HAWKINS.

1.—ELEMENTARY GERMAN. Five hours credit. Both semesters, 1:30
to 3:30.

Engel, Thurnau, Kruse, Jones, Palmblad, Wilson, Spangler,
Hochdörfer, Hawkins.

2.—PROSE READINGS. Five hours credit. Both semesters.
Corbin, Kruse, Jones, Palmblad, Wilson, Hochdörfer, Hawkins.

3A.—INTERMEDIATE GERMAN. Five hours credit. Both semesters,
8:30, 3:30.

Thurnau, Corbin, Sturtevant, Palmblad, Wilson, Spangler,
Hochdörfer, Hawkins.

4A.—GERMAN CLASSICS. Five hours credit. Both semesters, 9:30,
10:30, 2:30. Engel, Sturtevant, Jones, Spangler, Hochdörfer, Hawkins.

* Absent on leave, 1916-'17.

3B.—SCIENTIFIC GERMAN. Five hours credit. First semester, 8:30. A thorough review of grammar; das Edle Blut or equivalent text, 40 to 50 pages, as introductory reading matter, followed by a scientific German reader. This course is intended for students in engineering and medicine and those majoring in science, and may not be counted toward a major in German. The aim of the course is to introduce the student to the style and vocabulary of scientific German and to develop the ability to read simple scientific writings. Open to students who have had German 1 and 2. Hawkins.

4B.—SCIENTIFIC GERMAN. Five hours credit. Second semester, 8:30. Reading of scientific German texts in class and assigned readings on selected topics outside of class. This course is also intended for students in engineering and medicine and those majoring in science and may not be counted toward a major in German. Its aim is to develop the rapid reading of more advanced scientific German in special fields. It is planned as a continuation of course 3B, but is open to students who have had 3A. Hawkins.

MATHEMATICS.

Professors: VAN DER VRIES, ASHTON.

Associate Professor: MITCHELL.

Assistant Professors: STOFFER, JORDAN.

Instructors: LARSEN, STEIMLEY, MILLER, WHEELER, LEFSCHETZ.

2a.—COLLEGE ALGEBRA. Three hours credit. Both semesters.
Stouffer, Steimley.

3b.—PLANE TRIGONOMETRY. Two hours credit. Both semesters.
Stouffer, Steimley.

4.—ANALYTICAL GEOMETRY I. Two hours credit. Both semesters.
Van der Vries, Steimley.

5.—CALCULUS I. Three hours credit. Both semesters.
Mitchell, Steimley.

6.—ANALYTICAL GEOMETRY II. Two hours credit. Both semesters.
Ashton.

7.—CALCULUS II. Three hours credit. Both semesters.
Stouffer, Steimley.

PHARMACEUTICAL CHEMISTRY.

Professors: SAYRE, HAVENHILL.

Associate Professor: NELSON.

1.—PHARMACEUTICAL CHEMISTRY. Two, three or five hours credit. First semester, 8:30 to 10:30. A course embracing the fundamental analytical operations necessary in determining the strength and purity of drugs and medicines. Havenhill.

2.—PLANT ANALYSIS. Two and one-half or five hours credit. Elective. Either semester, by appointment. The separation and estimation of the proximate principles of plants. Must be preceded by chemistry 4 and 54, or chemistry 4 and pharmaceutical chemistry 1. Sayre, Havenhill.

3.—ANALYSIS OF NOSTRUMS. Five hours credit. Elective. Either semester, by appointment. Must be preceded by pharmaceutical chemistry 3. Sayre.

50.—ANALYSIS OF DRUGS. Five hours credit. Elective. Either semester, by appointment. This is a companion course to food analysis (see chemistry 58) and is arranged especially for students who desire to qualify as food and drug analysts. Must be preceded by chemistry 4 and 54, or chemistry 4 and pharmaceutical chemistry 1. Havenhill.

PHARMACY AND MATERIA MEDICA.

Professors: SAYRE, HAVENHILL, BAILEY.*Assistant Professor:* ZUCK.

1.—INTRODUCTORY PHARMACY. Two hours credit. First semester, Tu. Th., 9:30. Lectures and recitations. The history of the Pharmacopœia and a study of the apparatus and processes employed in the preparation of medicines. Zuck.

2.—PHARMACEUTICAL ARITHMETIC. Three hours credit. First semester; M. W. F., 9:30. A study of weights, measures, specific gravity, and the principles of pharmaceutical arithmetic. Lectures and recitations. Havenhill.

3.—OFFICIAL PHARMACY. Two hours credit. Second semester, Tu. Th., 10:30. A systematic study of the official preparations, including their classifications, preparation, and preservation. Must be preceded by course 1. Lectures and recitations. Zuck.

4.—INORGANIC MEDICINAL CHEMICALS. Three hours credit. Second semester, M. W. F., 10:30. The source, manufacture, physical properties, general and specific characteristics and identity of inorganic substances used in medicine. Lectures, recitations, and laboratory work. Must be preceded by introductory chemistry. Havenhill.

5.—GENERAL REVIEW OF PHARMACY. One hour credit. Senior; second semester, Th., 11:30. A synoptic review of the essentials of pharmacy, chemistry, and materia medica. Havenhill.

6.—DRUG STORE MANAGEMENT. One hour credit. Senior; second semester, Tu., 11:30. A lecture course with collateral reading relating to the legal and business problems confronting the retail pharmacist. Sayre, Havenhill, Zuck, Watson, and invited lecturers.

7.—LIBRARY WORK. Hours by appointment, second semester (b). Specially designed to familiarize the student with pharmaceutical literature; will include exercises in indexing and reviewing. Sayre.

8.—Manufacture of artificial fruit essences and other compound ethers. Sayre.

9.—PHARMACEUTICAL JURISPRUDENCE. Hours by appointment. A study of the laws pertaining to pharmacy in different states, and to the laws pertaining to the mercantile business, together with practical business suggestions. A course of not less than ten lectures, given in connection with the Pharmaceutical Society.

10.—ELEMENTARY ACCOUNTING. Hours by appointment. A course of lectures covering the principles of accounting applicable to the business of pharmacy. Given under the supervision of the Department of Economics and Commerce.

11.—INTRODUCTORY PHARMACOLOGY. One hour credit. First semester, Thur., 1:30-3:30. A course designed for medical students, embracing metrology, and the processes and apparatus used in the preparation of medicines, including the elements of prescription writing and a brief outline of the official preparations. Havenhill.

50.—MANUFACTURING PHARMACY. Eight hours credit. Senior; first semester, 1:30 to 4:30. Practical work in the manufacture of standard medicinal preparations, as contained in the Pharmacopœia and National Formulary. Laboratory work and recitations. Must be preceded by Pharmacy 1, 2, 3, 4, and Botany 1. Havenhill, Zuck.

51.—PRESCRIPTION PRACTICE. Two hours credit. Senior; second semester, (a) 8:30 to 10:30. Compounding of prescriptions and a practical study of incompatibilities. Lectures and laboratory work. Prerequisite, course 50. Havenhill, Zuck.

52.—MATERIA MEDICA I. Three hours credit. Senior; first semester, 11:30. A critical study of the drugs and preparations of the U. S. Pharmacopœia and Natural Formulary. Lectures and recitations.

Sayre.

SECTION VIII.
The School of Medicine.

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FACULTY.

- FRANK STRONG, Ph. D., President.
SAMUEL J. CRUMBINE, M. D., Dean.
MERVIN T. SUDLER, Ph. D., M. D., Associate Dean and Professor of Surgery.
EDGAR H. SUMMERFIELD BAILEY, Ph. D., Professor of Chemistry.
LUCIUS E. SAYRE, Ph. M., Professor of Pharmacy.
L. D. HAVENHILL, B. S., Professor of Pharmacy.
DON CARLOS GUFFEY, M. D., Professor of Obstetrics and Gynecology.
JOHN SUNDWALL, Ph. D., M. D., Professor of Anatomy.
LINDSEY S. MILNE, M. D., Professor of Medicine.
BENNET M. ALLEN, Ph. D., Professor of Zoölogy.
SAMUEL A. MATTHEWS, M. D., Professor of Physiology and Experimental Pharmacology.
FRANK B. DAINS, Ph. D., Professor of Chemistry.
RALPH H. MAJOR, M. D., Professor of Pathology and Bacteriology.
GEORGE E. COGHILL, Ph. D., Professor of Anatomy.
JACOB BLOCK, M. D., Professor of Genito-urinary Surgery.
JOHN W. PERKINS, M. D., Professor of Surgery.
SAMUEL S. GLASSCOCK, M. D., Professor of Psychiatry.
JOSEPH E. SAWTELL, M. D., Professor of Rhinolaryngology.
ISADOR J. WOLF, M. D., Professor of Medicine.
FRANKLIN E. MURPHY, M. D., Professor of Clinical Medicine.
LYMAN L. UHLS, M. D., Professor of Psychiatry.
ZACHARIAH NASON, M. D., Professor of Clinical Obstetrics.
EDWARD J. CURRAN, M. D., D. Ophth., Professor of Ophthalmology.
PETER T. BOHAN, M. D., Professor of Clinical Medicine.
GEORGE M. GRAY, M. D., Professor of Clinical Surgery.
JESSE E. HUNT, M. D., Professor of Medicine (Pediatrics).
WILLIAM W. DUKE, M. D., Professor of Experimental Medicine.
ANDREW L. SKOOG, M. D., Professor of Neurology.
RICHARD L. SUTTON, M. D., Professor of Dermatology.
C. FERDINAND NELSON,* Ph. D., Associate Professor of Physiological Chemistry.
ARTHUR E. HERTZLER, Ph. D., M. D., Associate Professor of Surgery.
WILLIAM F. KUHN, M. D., Adjunct Professor of Psychiatry.
WILLIAM L. MCBRIDE, M. D., Associate Professor of Dermatology.
WILLIAM K. TRIMBLE, M. D., Associate Professor of Medicine.
JOHN N. SCOTT, M. D., Associate Professor of Electro-Therapeutics.
WALTER S. SUTTON,† A. M., M. D., Associate Professor of Surgery.
CHARLES C. CONOVER, M. D., Associate Professor of Clinical Medicine.
WILLIAM J. V. DEACON, Associate Professor of Preventive Medicine.
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* Absent on leave, 1916-'17.

† Died November 10, 1916.

- ORVAL J. CUNNINGHAM, M. D., Associate Professor of Surgery (anæsthetics).
- CHARLES A. HASKINS, B. S., Associate Professor of Sanitary Engineering.
- NADINE NOWLIN, A. M., Assistant Professor of Zoölogy.
- JOHN G. HAYDEN, M. D., Assistant Professor of Surgery.
- EDWARD P. HALL, M. D., Assistant Professor of Rhinolaryngology.
- ROBERT D. IRLAND, M. D., Assistant Professor of Obstetrics and Gynecology.
- THOMAS G. ORR, M. D., Assistant Professor of Surgery.
- EUGENE SMITH, M. D., Demonstrator in Anatomy.
- CLARENCE B. FRANCISCO, M. D., Instructor in Orthopedic Surgery.
- CLIFFORD C. NESSELRODE, M. D., Instructor in Clinical Surgery.
- JOSEPH L. McDERMOTT, M. D., Instructor in Roentgen Therapy.
- HERBERT F. VANORDEN, M. D., Instructor in Gynecology and Obstetrics.
- FRANK RIDGE, M. D., Instructor in Medicine (physical diagnosis).
- JOSEPH B. COWHERD, M. D., Instructor in Medicine (pediatrics).
- SAM E. ROBERTS, M. D., Assistant in Otorhinolaryngology.
- VIRGIL W. MCCARTY, M. D., Assistant in Otorhinolaryngology.
- VIVIAN STRAHAM, A. B., Technical Assistant in Anatomy.
- HARRY CALVIN BERGEN, M. D., Assistant in Medicine (pediatrics).
- CHARLES C. DENNIE, M. D., Assistant in Dermatology.
- FRED C. RUMSEY, M. D., Assistant in Surgery.
- C. S. GILLILAND, M. D., Assistant in Surgery.
- DARWIN W. DELAP, M. D., Assistant in Clinical Medicine.
- LENA M. SMYTHE, Technical Assistant in Pathology and Bacteriology.
- ELEANOR MAUDE KIBBEY, A. B., Secretary and Assistant Registrar.
- EVELYN STANTON, A. B., Librarian.
- S. MILO HINCH, R. N., Superintendent of Bell Memorial Hospital and Supervisor of Nurses.
- ELIZABETH TALLE, Cashier Bell Memorial Hospital.
- GRACE SCOTT, R. N., Assistant in the Operating Room.
- ETHEL M. HAINES, R. N., Assistant in the Dispensary.

ADMINISTRATIVE COMMITTEE.

FRANK STRONG, *Chairman.*

S. J. CRUMBINE.	D. C. GUFFEY.
M. T. SUDLER.	J. E. SAWTELL.
L. E. SAYRE.	F. E. MURPHY.
S. A. MATHEWS.	E. J. CURRAN.
L. S. MILNE.	W. S. SUTTON.
JOHN SUNDWALL.	W. K. TRIMBLE.
R. H. MAJOR.	F. B. DAINS.

The School of Medicine.

HISTORY.

In the act of the legislature establishing the University (1862) the founding of a School of Medicine was contemplated, but conditions were such that it was impossible to carry out these plans at this time. However, steps were taken, as opportunity offered, to further the formation of a School of Medicine, and in 1880 the "Preparatory Medical Course," under the administration of the College, was established. This continued until 1899, when the School of Medicine was definitely organized, and the first two years of medical instruction were offered.

In the fall of 1905 the Kansas City Medical College (founded in 1869), the Medico-chirurgical College (founded in 1896), and the College of Physicians and Surgeons (founded in 1893), were merged into the last two years of a four-year medical course under direction of the University of Kansas. This was made possible through a gift to the University of some tracts of land in and about Rosedale, Kan., by Dr. Simeon B. Bell, in memory of his wife, Eleanor Taylor Bell. The work was first given in the laboratory and lecture rooms of the building which had formerly belonged to the College of Physicians and Surgeons and a dispensary was conducted in the building of the Medico-chirurgical College. In January, 1907, the school was moved to the new buildings which had been erected in Rosedale, on the land referred to above.

ORGANIZATION.

THE FACULTY. The Faculty of the School of Medicine includes members who give instruction in the work of the first year and a half at Lawrence, and those giving instruction in the work of two and one-half years at Rosedale.

THE ADMINISTRATIVE COMMITTEE. The administrative committee of the School of Medicine has charge of matters affecting the School as a whole, subject to the rules of the Board of Administration. It is made up of the Chancellor of the University, as chairman, the Dean, the Associate Dean, the professors and associate professors from Lawrence and Rosedale.

THE WORK AT LAWRENCE. The work of the first year and a half is given at Lawrence. It consists of the fundamental scientific branches: anatomy, neurology, histology, embryology, physiology, pharmacology, chemistry, bacteriology, etc. The medical students have all the advantages of the University laboratories, libraries, museums, and lectures.

Students should matriculate and register for the first year and a half at Lawrence.

THE WORK AT ROSEDALE. The work of the last half of the second year and the third and fourth years is intended largely to familiarize the student with the various manifestations of diseases and their treatment. Much of the work is done by the bedside, and the student has an opportunity to observe all the processes of making a diagnosis and prescribing the treatment.

DEGREES.

The degree of doctor of medicine is granted to those satisfactorily completing the work of the four-year medical curriculum. The faculty

of the School of Medicine determines the standards, examinations, curriculum, etc., leading to the degree of doctor of medicine, and may change these from time to time as necessary or desirable.

Candidates for the degree of doctor of medicine may, under the plan for a six-year curriculum explained below, receive from the College of Liberal Arts and Sciences the degree of bachelor of arts, or the degree of bachelor of science in medicine.

The following plan has been arranged with the College:

College students who have attained at least full Senior standing and who have credit for certain subjects named below may offer in satisfaction of all or part of the requirements of the Senior year the entire first year of the medical curriculum. To such students the College will grant the degree of bachelor of arts.

College students who have attained at least full Junior standing and who have credit for certain subjects named below may offer in satisfaction of all or part of the requirements of the Junior and Senior years the entire first and second years of the medical curriculum. To such students the College will grant the degree of bachelor of science in medicine.

The subjects, or equivalents, which must have been completed before admission to the Medical School are:

Modern language, 10 hours, preferably German I and II.

Chemistry, 10 hours, including I and II.

Physics I, 5*a* and 5*b*, and 6*a* and 6*b*.

Biology, which should include zoölogy III and one course selected from zoölogy I, II, and botany III.

To secure this privilege of offering medical work towards the College degree, the student must have spent one full year in residence at the College before entering upon his medical studies, and must be certified to the Medical School by the Dean of the College as having met all the requirements above named. He must also register in the College as well as the Medical School and be subject to such general regulations of the College Faculty as govern other Juniors and Seniors.

A student who does not fully meet the entrance requirements to the Medical School will enroll in College classes necessary to complete such requirements, after which he may be admitted to the Medical School and enrolled in medical courses, but the aggregate number of hours of such enrollment in the two schools may not exceed that allowed to College students.

Whenever a student has completed the medical work in accordance with the foregoing provisions, the Dean of the Medical School will submit to the Dean of the College a certified statement of that fact accompanied by the recommendation of the Faculty of the School of Medicine that such student be admitted to the appropriate College degree. The name of the candidate will then be sent to the College Faculty as that of a candidate for that degree.

REQUIREMENTS FOR ADMISSION.

For entrance into the School of Medicine a student must have completed sixty hours (two years) of work in the College of Liberal Arts and Sciences of the University of Kansas, or work equivalent thereto.

The student who has completed the first two years of college work in another school, and who desires to enter the Medical School, should send a certified transcript of his work to the chairman of the committee on advanced standing, or the Registrar of the University. A rating will then be given on this work, showing under just what conditions he will be accepted by the School of Medicine.

A student may be conditioned in six hours' work, which amount can be completed in the following session of the Summer School, but this condition must be removed before the student enters upon the second year's work in the School of Medicine.

This preliminary college work must include the following:

Chemistry	10 hours.
Physics	10 hours.
Biology	10 hours.
German or French	10 hours.

For description of courses, see alphabetical list in College Section of Catalog. These or their equivalent will be accepted.

The minimum requirement in chemistry is chemistry I and II, but the student is strongly advised to include in his preliminary work a course in qualitative analysis. If time permits, some work in quantitative analysis should be done, as it affords an excellent preparation for physiological chemistry.

The physics requirements include at least 10 hours of college physics. Courses 5*a* and 5*b* and 6*a* and 6*b* may be offered. Both the latter courses are highly recommended.

The minimum requirement in biology is zoölogy III (comparative anatomy) and one course selected from zoölogy I, zoölogy II, and botany III.

In languages, at least German I and II should be presented. The student, however, is strongly advised to complete German I, II, III, and French I and II. French I and II will be accepted for the minimum language requirement, but German is much preferred.

Optional Work.

For the rest of the two years' college work, courses in history, economics, and psychology are advised, in order to give the student as broad a foundation as possible for his technical studies in the Medical School.

The group requirements in the College must be fulfilled. The above-named courses, as a rule, fit in with these group requirements. *Every prospective medical student is urged to consult the Associate Dean or the Secretary of the School of Medicine in regard to this preparatory work.*

Advanced Standing.

Upon examination in those subjects for which credit is desired advanced standing in the first and second years of the course is granted to students who have completed this work in acceptable schools.

Candidates desiring such advanced standing must submit a detailed statement of the work done by them, including their preliminary education, and for which they wish credit; such statements to be signed by the instructor in each subject or by an officer of the institution in which work was done. The last year's work must be done in this institution.

REGISTRATION.

All candidates for admission having certificates from accredited schools and all students of the University intending to pursue their studies during the ensuing year must present themselves for registration at the University on September 17, 18, or 19, 1917. *Registration at a later date will be permitted only on the payment of a fee of one dollar.*

ENROLLMENT.

After registration has been completed with the Registrar, and fees have been paid, students should apply to the Dean for enrollment in their classes. Enrollment the first semester occurs September 18 and 19, 1917, and on the first day of the second semester. *Enrollment at a later date will be permitted only on the payment of a fee of one dollar.*

In order to obtain the degree of doctor of medicine it is necessary to be regularly enrolled in the School of Medicine for at least four full years.

museum contains more than one thousand specimens, preserved in Kaiserling's fluid. A sufficient number of microscopes is provided so that each student has his own equipment.

LIBRARY. The library at Rosedale is a part of the general University library and is managed as such. The files of periodicals have been carefully selected, with a view to training the student to use the best in current medical literature. There is a collection of reprints and dissertations. Carefully selected monographs and textbooks are added from year to year.

HOSPITAL. The hospital has accommodations for sixty-five patients. Clinical material is furnished, first, by free patients (the expense being met by a legislative appropriation) who are sent in from the dispensary or by the heads of the departments; second, by county cases which are sent in under the laws passed by the legislature permitting counties to send their charity cases to this hospital for treatment, the counties paying the actual expenses incurred; third, by patients who can afford to pay hospital fees and who are admitted as clinical patients on presenting a letter from their family physician stating that they can not afford to pay for professional services and are recommended for free treatment.

Internes are appointed out of every graduating class to serve in the hospital. The internes are selected by the Administrative Committee from the applicants who have made the highest average in their work during the last two years.

DISPENSARY. The out-patient department is housed in the newly erected Dispensary Building. It is a two-story fireproof building, containing a drug room, a laboratory, a lecture room, a waiting room, and consultation rooms. It is open from 10 to 12 a. m. and from 2 to 4 p. m., Sundays and holidays excepted. Here students have an opportunity to study and examine ambulant patients under competent supervision in the clinic.

OPPORTUNITIES IN CITY HOSPITALS. Instruction is also given at St. Margaret's Hospital of Kansas City, Kan., by permission of the Sisters who control this institution. Its capacity is three hundred beds. Fourth-year students spend three mornings a week in this hospital. The school is allowed similar privileges by the authorities of Mercy Hospital, where instruction in pediatrics is given.

CURRICULUM.

FRESHMAN YEAR.

FIRST SEMESTER (at Lawrence):

Anatomy 1, 2, 3, 4, 5—Human dissection and Osteology.
Anatomy 7—Histology and Splanchnology.
Organic Chemistry.

SECOND SEMESTER (at Lawrence):

Anatomy 1, 2, 3, 4—Dissection.
Anatomy 8—Embryology.
Anatomy 9—Neurology.
Physiological Chemistry.

SOPHOMORE YEAR.

FIRST SEMESTER (at Lawrence):

Physiology 1.
Pharmacology—Experimental.
Materia Medica.
Bacteriology.
Toxicology.
Parasitology.

SECOND SEMESTER (at Rosedale):

Pathology 3.
Anatomy 4—Topographical.
Physiology 3—Experimental
Pharmacology.
Materia Medica, Pharmacology.
Medicine 2, 3.
Surgery 1.
Obstetrics 1.
Hygiene.

JUNIOR YEAR. (At Rosedale.)

FIRST SEMESTER:

Medicine 4, 5, 6.
Surgery 3, 5, 7, 9.
Obstetrics 2.
Pathology 4.
Ophthalmology 1.
Dispensary.

SECOND SEMESTER:

Medicine 4, 5, 8.
Surgery 4, 7, 8, 16.
Obstetrics 4.
Ophthalmology 1.
Neurology 1.
Otorhinolaryngology 1, 2.
Orthopedic Surgery.
Pediatrics.
Hematology, Serology.
Dispensary.

SENIOR YEAR. (At Rosedale.)

FIRST SEMESTER:

Medicine 1, 10, 11.
Surgery 10, 13, 14.
Obstetrics 7, 8.
Medical Economics 2.
Neurology 3.
Psychiatry 4.
Pediatrics, Orthopedic.
Otorhinolaryngology 1.
Specialities—Eye, Ear, Nose, Throat, Skin, Neurology.
Dispensary.

SECOND SEMESTER:

Medicine 10, 11, 13, 14.
Surgery 11, 13, 14, 15.
Gynecology, Obstetrics 7, 8.
Neurology 2, 3.
Psychiatry 4.
Dermatology 2.
Specialties.
Dispensary.

DESCRIPTION OF COURSES.

ANATOMY.

Professors: SUNDWALL, COGHILL.
Demonstrator: EUGENE SMITH.
Technical Assistant: VIVIAN STRAHM.

The department of anatomy includes gross anatomy (dissection), histology, embryology, and neurology. The laboratories are located in the basement of the Museum of Natural History, and are thoroughly equipped with apparatus, specimens, models, charts, and materials for both advanced and elementary work. For those prepared to carry advanced work and research special facilities are afforded.

By the provisions of state law there is available an abundant supply of dissecting material. Abundant material for the study of osteology is furnished. The laboratories for microscopic anatomy are well supplied with all the apparatus, chemicals, and stains essential for both elementary and research work.

In the study of the various tissues and organs special emphasis is laid on their development and gradual differentiation. A close relation always exists between the microscopic and gross anatomy, and every effort is made to teach students the unity of the two. Independent work is always emphasized.

The library receives most of the current anatomical and morphological periodicals. In addition it contains many of the more important books and monographs on anatomy and related subjects.

A fee is charged each student in anatomy, which covers the actual cost of material consumed.

Ten hours of biology (zoölogy and botany) or their equivalent are prerequisites for all courses in anatomy except introductory anatomy. The biological training should include comparative vertebrate anatomy.

COURSES OF INSTRUCTION.

INTRODUCTORY ANATOMY. A course on the structure of the human body for college students other than medical students. Five hours credit.

1, 2, 3, 4. Required of Medical Students.—The student must make a complete dissection of the human body. Atlases and textbooks are used as guides. The work in the laboratory is as independent as possible. Drawing and notes supplement the dissections. Quizzes are given by instructors on parts as completed. Credit is given only upon the completion of the work outlined and the passing of final examinations—both written and practical. Each course is supplemented by lectures bearing on the practical phases of the dissection.

Sundwall, Coghill, E. Smith, Blincoe.

1.—DISSECTION OF THE ARM AND THORACIC WALL. Three hours credit. Fee, \$5.

2.—DISSECTION OF THE LEG, PERINEUM AND ABDOMINAL WALL. Three hours credit. Fee, \$5.

3.—DISSECTION OF THE THORACIC AND ABDOMINAL VISCERA. Four hours credit. Fee, \$5.

4.—DISSECTION OF THE HEAD AND NECK. Four hours credit. Fee, \$5.

5.—HUMAN OSTEOLOGY. One hour credit. A systematic study of the human skeleton. Supplemented by drawings, clay modeling, etc.

Smith.

6.—**TOPOGRAPHICAL ANATOMY.** Two hours credit. A laboratory course in human anatomy, including dissections, study of models, preparations, cross sections. The practical phases are emphasized. Courses 1, 2, 3, 4 and 5 are prerequisites. (At Rosedale.) Fee, \$5. Sundwall.

7.—**HISTOLOGY AND SPLANCHNOLOGY.** Five hours credit. A brief course on the structure of the cell, followed by a systematic study of the structure of organs. Fee, \$5. Coghill, and assistants.

8.—**EMBRYOLOGY.** Two hours credit. The study of the embryology of the chick and pig, followed by a consideration of human embryology. Fee, \$3. Coghill, and assistants.

9.—**NEUROLOGY.** Three hours credit. Gross and microscopic anatomy of the nervous system. Fee, \$3. Coghill, and assistants.

10.—**ADVANCED WORK IN ANATOMY.** By appointment. Opportunities are given advanced students and graduate physicians for advanced work and research, both in gross and microscopic anatomy. Prerequisites, anatomy 1 to 9. Sundwall, Coghill.

11.—**SEMINAR.** Advanced students and physicians are admitted to a seminar in which subjects of current interest in anatomy are discussed. Prerequisites, anatomy 1 to 9, reading knowledge of French and German. Sundwall, Coghill.

Total hours of instruction in work required, 1008; gross anatomy, 720; neurology, 72; histology, 144; embryology, 72.

ORGANIC CHEMISTRY.

Professors: BAILEY, DAINS.

61.—**ORGANIC CHEMISTRY.** Five hours college credit. First semester, M. W. F., 1:30 to 2:30; laboratory, Tu. Th., 1:30 to 4:30. Lectures, recitations, and laboratory. A general introductory course in organic chemistry, covering the most important classes of organic compounds, with their preparation, properties, and uses. Required of students who have not completed it in the preliminary college work. Fifty-four hours lecture and recitation, 108 hours laboratory work. Dains.

ZOOLOGY.

Professor: ALLEN.

Assistant Professor: NOWLIN.

1.—**PARASITOLOGY.** Two or three hours credit. First semester; lectures, M. and W., at 1:30; laboratory, F., 1:30 to 3:30. This course deals with the animal parasites of man, and is especially designed for the needs of medical students and those interested in public-health problems. Prerequisite, 1 or equivalent. Allen, Nowlin.

BIOCHEMISTRY.

Professor: SAYRE.

Associate Professor: NELSON.

50.—**BIOLOGICAL CHEMISTRY.** Five hours credit. A survey of the field of biochemistry adapted to the needs of medical students. Lectures, conferences, laboratory work. Prerequisites, general and organic chemistry. Lectures, Tu. Th. F., 1:30 to 2:30; laboratory work, M. W. F. afternoon. Six hours college credit. Fifty-four lectures, 162 hours laboratory work. Nelson, Williams.

51.—**ADVANCED BIOLOGICAL CHEMISTRY.** Conferences and reports on selected topics. Two or more hours credit. Throughout the year. Nelson.

53.—COLLOID CHEMISTRY. Two hours credit. First semester. A study of colloids and the colloidal state of matter. Special emphasis is laid on the applications of colloid chemistry to problems in biochemistry.

Nelson.

101.—RESEARCH IN BIOLOGICAL CHEMISTRY. Two or more hours credit. Throughout the year.

Nelson.

BACTERIOLOGY.

Professor: BILLINGS.

Associate Professor: SHERWOOD.

Assistant Professor: CLAWSON.

50.—GENERAL BACTERIOLOGY. Five hours credit. First semester, 3:30 to 5:30. Laboratory work with recitations and a course of lectures on the relation of bacteria to public-health problems. The laboratory work deals with the preparation of media, cultural methods, diagnostic tests, preparation of vaccines, and an intimate study of important pathogenic organisms.

Billings, Sherwood.

53.—BACTERIOLOGY OF FOODS. Five hours credit. Second semester, 1:30 to 3:30. Bacteriological examination of milk, oysters, meat, etc.

Clawson.

57.—IMMUNITY. Five hours credit. Second semester, 10:30 to 12:30. Laboratory study of precipitins, agglutinins, bacteriolysins and complement fixation.

Sherwood.

61.—SPECIAL PROBLEMS IN BACTERIOLOGY. Two to ten hours credit. Either semester, by appointment. Special work along some definite line with a view to obtaining familiarity with a particular kind of laboratory procedure.

Sherwood.

PHARMACOLOGY, THERAPEUTICS, AND TOXICOLOGY.

Professors: SAYRE, HAVENHILL, BAILEY.

Associate Professor: NELSON.

The courses offered in this department are especially designed to meet the requirements of medical students, special emphasis being given to the properties, action, and uses of the more important medical agents and poisons.

1.—INTRODUCTORY PHARMACOLOGY. (*At Lawrence.*) Two hours credit. First semester, Th., at 1:30. This course embraces the study of weights, measures, processes used in the preparation of medicines, illustrated by exercises in the pharmaceutical laboratory; prescription writing; and physical properties and identification of crude drugs.

Havenhill.

2.—PHARMACOLOGY AND MATERIA MEDICA. (*At Lawrence.*) Three hours credit. First semester, at 2:30, M., T., and W. Classification, chemical and physical properties of drugs, therapeutical application, method of prescribing and dispensing, the action of organic and inorganic chemicals and their physiological relationships. Lectures and recitations. Required of second-year students. Must be preceded by course 1. Three hours, fall term, at 11:30.

Sayre.

3.—PHARMACOLOGY AND MATERIA MEDICA. (*At Rosedale.*) Two hours credit. Second semester, Friday, at 11 and at 1:30. A continuation of course 2.

Sayre.

4.—LABORATORY WORK IN PHARMACOLOGY. (*At Lawrence.*) The facilities for pharmaceutical investigation of a practical character are made necessary by the intimate connection of the drug laboratories with the State Board of Health. Investigation of the physiological action of drugs and chemical analysis of active (toxic) principles of drugs. By

special appointment with the Dean, and department of physiological chemistry; the kind and amount of work to be arranged for.

Sayre, Nelson.

5.—TOXICOLOGY. One hour credit. First semester, Friday, at 9:30. Lectures on the sources, properties, methods for detection, and antidotes for poisons.

Bailey.

TOTAL HOURS OF INSTRUCTION, 144. Introductory pharmacology, 54, materia medica 72, toxicology 18.

PREVENTIVE MEDICINE.

Professor: CRUMBINE.

Associate Professors: DEACON, HASKINS.

For a number of years the relations existing between the University of Kansas and the Kansas State Board of Health have been very close and intimate. The water, food and drug laboratories of the Board are at the University, the work of analysis being done by the University men. The engineers of the State Board of Health are the engineers of the University. Much of the research and investigation undertaken by the State Board of Health has been through the coöperation of the Faculty of the University.

It is becoming more and more apparent that preventive medicine is to have an increasingly important place in the education and culture of the future physician.

The close relations between the State Board of Health and the University of Kansas have made it easy to bring about the more or less unique relationship that exists between the School of Medicine of the University and the State Board of Health, which, in effect, is the union of the curative and preventive agencies of the state.

Realizing the importance of a fundamental understanding of the value of preventive medicine, not only to practitioners of medicine, but in training public-health officers, the School of Medicine has created a separate Department of Preventive Medicine, at the head of which is the Dean of the School, who is the secretary of the State Board of Health.

1.—PUBLIC HEALTH. One hour credit. Second year, second semester, Wednesday at 11.

(a) Sanitary engineering, water supplies, sewage collection, purification and disposal, sanitary architecture, plumbing, ventilation, public buildings, schools, hospitals, dwellings, etc.

(b) Special sanitation of public institutions, of transportation, school hygiene, rural, occupational, and other special sanitation.

2.—PUBLIC HEALTH. One hour credit. Fourth year, first semester, Wednesday at 11.

(a) Introductory, historical, definitions and principles, relations of hygiene to other sciences and professions.

(b) Vital statistics, economics of disease, eugenics, other social aspects and problems.

(c) Immunity, race questions, infection.

3.—PREVENTIVE MEDICINE. One hour credit. Fourth year, second semester, Wednesday at 11.

(a) The study of environment, air, water (including ice and mineral waters), milk, dairy hygiene and milk products, other foods, soil, sewage.

(b) Infectious diseases and their epidemiology (including venereal diseases), notifiable diseases.

(c) Vaccines and protective inoculations.

(d) Disinfection and disinfectants.

(e) Animal parasites.

(f) Insects and disease, the control of diseases through the control of their disseminators.

(g) Diseases communicated to man by the lower animals.

(h) Legal and administrative devices for the control of diseases, the principles of sanitary law illustrated by the sanitary laws of Kansas, quarantine and isolation, health officers and boards (federal, state and local), municipal sanitation, pure foods and drugs, hygienic laboratories, the education of the public.

PATHOLOGY AND BACTERIOLOGY.

Professor: MAJOR.

Technical Assistant: LENA M. SMITH.

3.—GENERAL PATHOLOGY. (*At Rosedale.*) Five hours credit. Second semester, M. W. F., 8 to 11; Tu., 8 to 10. Lectures, laboratory, and recitations. This course is devoted to the study of pathological processes, with especial emphasis on the manner in which lesions are produced, considerable time also being devoted to pathological technique. Required of second-year students. Major, Black.

4.—SPECIAL PATHOLOGY. (*At Rosedale.*) Two hours credit. Second semester, Tu. and F., at 11. Recitations and laboratory. This course takes up the study of special pathology, as illustrated by gross and microscopic specimens. Required of third-year students. Major.

5.—POST-MORTEM PATHOLOGY. (*At Rosedale.*) Three hours credit. Both semesters. Assigned work. Each student is required to see all autopsies performed during his third year. Major.

6.—ADVANCED BACTERIOLOGY AND PATHOLOGY. (*At Rosedale.*) Open to advanced students who have had sufficient preparation. Experimental work and original research in all branches of bacteriology, pathology and immunology, arranged to suit the needs of individual students. Major.

8.—GYNECOLOGICAL PATHOLOGY. Three hours credit. First semester. This is essentially a laboratory course, in which the most important pathological lesions of the female genital tract are studied from the standpoint of gross and microscopic pathology. Required of fourth-year students. Guffey, Major.

TOTAL HOURS OF REQUIRED WORK, 433. General pathology 234, special pathology 108, *post-mortem* pathology 40, gynecological pathology 51.

PHYSIOLOGY AND PHARMACOLOGY.

Professor: MATTHEWS.

Instructor: SMITH.

EQUIPMENT. The laboratory is equipped with apparatus sufficient to give all of the usual class demonstrations; and for general class work to accommodate thirty-six students working in groups of four.

Each group is given an opportunity to work out as completely as possible all the physiological processes, capable of laboratory demonstration.

The laboratory has been able to obtain an ample supply of laboratory animals for experimental and research purposes.

INSTRUCTION. The required instruction in physiology extends throughout the second year, and is divided as follows:

PHYSIOLOGY I. Five hours credit. Physiology of the blood, circulation, respiration, muscles, secretion, and metabolism. First semester, lectures and recitations, three a week; laboratory work, six hours a week.

Matthews.

PHYSIOLOGY II. Three hours credit. Continuation of Course I. Second semester. Lectures and recitations, three a week. Rosedale and Lawrence.

Matthews.

PHARMACOLOGY IV. Three hours credit. The physiological actions of chemical substances. (Experimental Pharmacology.) First semester,

lectures and recitations, three a week; laboratory work, four hours a week. (Continued second semester at Rosedale as a part of Course II.)
Matthews.

PHYSIOLOGY AND PHARMACOLOGY VII. Research work in physiology and pharmacology. Throughout the year.
Matthews.

MEDICINE.

Professors: MILNE, MURPHY, WOLF, DUKE, BOHAN,
GLASSCOCK, KUHN, UHL, SKOOG.

Associate Professors: TRIMBLE, MCBRIDE, SUTTON,
CONNOVER.

Instructor: RIDGE.

Clinical Assistants: COWHERD, DENNIE, DELAP.

The course in medicine begins in the second half of the second year and leads up to the individual study of clinical cases in the fourth year.

SECOND YEAR.

1.—PHYSICAL DIAGNOSIS I. Two hours credit. Second semester, M. W., 9 to 11. The course consists of demonstrations and practical exercises illustrating the simpler methods of physical examination of the normal organs, with the exposition of the physical laws involved. It includes also instruction in the recording of clinical cases. Demonstrations are also conducted in the dispensary and in the hospital for the practical study of physical signs of diseased conditions.
Ridge.

2.—LABORATORY DIAGNOSIS. Two hours credit. Second semester, Th., 1 to 3. In this class students are trained in the methods of examining blood, sputum, and throat secretions, gastric contents, cerebrospinal fluids, urine, feces, pathological exudates, etc.
Trimble.

THIRD YEAR.

4.—SYSTEMATIC MEDICINE. Two hours credit. First semester, Tu. F., 10 to 11; second semester, 9 to 10. A systematic course of lectures is given on the diseases of the cardiovascular and respiratory systems, the peritoneum, liver, kidney, adrenals, thyroid, pancreas, and disorders of metabolism.
Milne.

5.—CLINICAL MEDICINE. Two hours credit. Both semesters, M. Th., 10 to 11. Ward classes are held twice a week, in which cases are demonstrated, as far as possible, to illustrate the subjects of the lecture course at that time.
Murphy.

Ward Work. Students are assigned to cases for individual study, and are required to prepare records of these cases and to note the progress and treatment of the disease.

5a.—DISPENSARY CLINIC. Tu., 10 to 12.

Milne.

6.—PHYSICAL DIAGNOSIS II. Continuation of course I. First semester, Tu., 11 to 12.

Ridge.

7.—CLINICAL BACTERIOLOGY, SEROLOGY, AND HEMATOLOGY. Two hours credit. Second semester, F., 9 to 12. In this course instruction is given in agglutinative and other serum tests, including the Widal and Wassermann reactions, the bacteriology of pathological exudates, blood cultures, vaccine therapy and diseases of the blood.
Trimble.

8.—DISEASES OF THE STOMACH AND INTESTINES. One hour credit. Second semester, S., 10 to 11. A systematic lecture course on diseases of the stomach and intestines.
Wolf.

9.—OUT-PATIENT WORK. Assignments are also made to the different dispensary rooms. Each case is allotted to a student, whose duty is to prepare the history and to examine the patient, under the direction of the physician in charge, who advises the treatment to be carried out in each case.

FOURTH YEAR.

10.—CLINICAL MEDICINE. Four hours credit. Both semesters, Tu. F., 10 to 12. Clinics are given at the bedside and in the dispensary on selected cases. Each of these cases has previously been studied by one student, who is responsible for the history of the case and for a special knowledge of this type of disease. Milne.

11.—CLINICAL MEDICINE. Three hours credit. Both semesters, M. Tu. Th., in sections, 9 to 12. A similar course to 10. St. Margaret's Hospital. Bohan and Milne.

12.—DIETETICS. One hour credit. First semester, S., 10 to 11. A lecture course on the dietetic treatment of disease. Wolf.

13.—CONTAGIOUS DISEASES. Two hours credit. Second semester, Tu., 1 to 2. A lecture course on the various infectious diseases. Milne.

PSYCHIATRY AND NEUROLOGY.

THIRD AND FOURTH YEARS.

1.—FUNCTIONAL AND ORGANIC DISEASES OF THE NERVOUS SYSTEM. Two hours credit. First semester, Sat., at 11. Lectures. Required of third-year students. Kuhn.

2.—PSYCHIATRY. One hour credit. Sat., at 11. Lectures covering the following subjects are given: History of insanity, forms of insanity, care and treatment of insanity in hospitals, care and treatment of insanity in general practice, state care of insane, and the relation of heredity to insanity. Both terms. Fourth year. Glasscock, Uhls.

3.—CLINICAL NEUROLOGY AND NEUROPATHOLOGY. One hour credit. Both terms, Tu. 2 to 4. This course includes practical exercises and demonstrations on the pathology of nervous diseases. Clinical demonstrations of neurological cases are also conducted, and students are assigned to the practical study of the nervous cases in hospital to be reported on at the class meeting. Skoog.

DERMATOLOGY.

THIRD YEAR.

1.—INTRODUCTORY COURSE. One hour credit. Second semester, Tu., at 8:30. Lectures and recitations. The anatomy and physiology of the skin, together with symptomatology, pathology, and clinical manifestations of the commoner skin diseases. Required of third-year students. McBride, Dennie.

FOURTH YEAR.

2.—CLINICAL DERMATOLOGY. One hour credit. Both semesters, Th. and Sat. a. m. Lectures and demonstrations of the various skin diseases, at the Bell Memorial and St. Margaret's hospitals. Fourth year. McBride, Sutton.

3.—DISPENSARY CLINICS. T. Sat., 2 to 4. Dennie.

PEDIATRICS.

THIRD YEAR.

1.—PEDIATRICS. One hour credit. Second semester, M. W. Sat., at 1. Students are shown children from birth to fifteen years of age, with special reference to the physical examination and diagnosis and diseases of children. In sections limited to four students, in the wards of Mercy Hospital. Cowherd.

FOURTH YEAR.

2.—PEDIATRICS. One hour credit. First semester, M. W. Sat. Continuation of course 1. Cases are assigned to students for examination and study, to be reported on at the next class meeting. Differential diagnosis and treatment are particularly emphasized, and the methods of infant feeding are demonstrated. Mercy Hospital; sections limited to four students. Cowherd.

TOTAL HOURS OF INSTRUCTION (exclusive of hospital and dispensary work), 895. Systematic medicine 102, Medical clinics 306, Neurology 50, Neurology clinics 85, Psychiatry 36, Clinical pathology (laboratory diagnosis, Clinical Bacteriology, Serology, Hematology) 64, Therapeutics 32, Pediatrics 68, Contagious diseases 32, Physical diagnosis 68, Dermatology 52.

6.—CLINICAL SURGERY. Two hours credit. Second semester, M. and Sat., at 1. Instruction in the dispensary. Required of third-year students. Orr.

7.—GENITO-URINARY SURGERY. One hour credit. Both semesters, F., at 9. Lectures and recitations. Required of third-year students. Block.

8.—SURGICAL PATHOLOGY. Two hours credit. Second semester, Tu. and F., at 2. Required of third-year students. Hertzler.

THIRD AND FOURTH YEARS.

9.—CLINICAL SURGERY. At the Bell Memorial Hospital. Two hours credit. Both semesters, W., 9 to 12. Required of third-year students. Sudler.

FOURTH YEAR.

11.—OPERATIVE SURGERY. Two hours credit. Second semester, W., at 10. Animal experimentation and work on the cadaver. Required of fourth-year students.

12.—SURGICAL CONFERENCES. One hour credit. Second semester. Papers on assigned subjects. Required of fourth-year students. Sudler.

13.—ELECTROTHERAPEUTICS. One hour credit. Both semesters, F., at 3, and Sat., at 1. Lectures and demonstrations. Required of fourth-year students.

14.—CLINICAL SURGERY. Three hours credit. Both semesters, M. Tu. Th., 8 to 12. Assigned in sections. At St. Margaret's Hospital. Required of fourth-year students. Gray, Nesselrode.

15.—ORTHOPEDIC SURGERY. One hour credit. Second semester, Sat., at 9. Lectures and recitations. Required of fourth-year students.

16.—CLINICAL SURGERY. One hour credit. Second semester. Instruction in wards at the Bell Memorial Hospital. Sudler.

17.—ORTHOPEDIC SURGERY. One hour credit. First semester, M. W. Sat., at 1. Instruction in wards at Mercy Hospital, in sections of four. Francisco.

SURGERY.

Professors: SUDLER, BLOCK, GRAY, SAWTELL, CURRAN.
Associate Professors: HERTZLER, SCOTT, CUNNINGHAM.
Assistant Professors: HAYDEN, HALL.
Instructors: ORR, NESSELRODE, FRANCISCO.
Assistants: ROBERTS, McCARTY, RUMSEY, GILLILAND, FITZSIMMONS.

Instruction in the principles of the various branches of surgery is given by means of lectures, recitations, and assigned subjects. Clinical instruction is given in the dispensary, in the Bell Memorial Hospital, and in St. Margaret's Hospital.

SECOND YEAR.

1.—ANESTHETICS. One hour for nine weeks during the spring term. Lectures and assigned reading. Required of second-year students. Monday, at 11. Sudler and Cunningham.

2.—MINOR SURGERY. Two hours credit. Second semester. Instruction in bandaging and dressings, at the dispensary. Required of second-year students. Orr.

THIRD YEAR.

3.—GENERAL SURGERY. Two hours credit. First semester, M. and Th., at 11. Lectures, recitations, conferences, and assigned work. An introduction to the principles underlying surgical procedure. Required of third-year students. Sudler.

4.—GENERAL SURGERY. Two hours credit. Second semester, Tu. and Th., at 1. A continuation of course 1. Required of third-year students. Hayden.

5.—FRACTURES AND DISLOCATIONS. Two hours credit. First semester, Tu. and Th., at 9. Lectures and recitations. Required of third-year students.

OTORHINOLARYNGOLOGY.

THIRD YEAR.

1.—Rhinolaryngology. One hour credit. Second semester, Th., at 2. For this course students are taught in groups at the Bell Hospital. It consists of a review of the anatomy and physiology of the parts, a drill in the use of instruments for diagnosis and in the methods of examination, illustrated by demonstrations on patients; also, of lectures, quizzes, and the examination of microscopical specimens. Required of third-year students. Sawtell, Hall, Roberts, McCarty.

2.—OTOLOGY. One hour credit. Second semester, M., at 11. The plan of instruction pursued in the study of diseases of the ear is the same as that in the department of nose and throat. Required of third-year students. Sawtell, Hall, Roberts, McCarty.

FOURTH YEAR.

3.—RHINOLARYNGOLOGY. One hour credit. First semester, Th., at 2. This course is a continuation of course 1. Here also the students are taught in groups. The subject matter of this course consists of a study of the deformities and diseases of the nose and throat and their treatment. Required of fourth-year students.

Sawtell, Hall, Roberts, McCarty.

4.—CLINICAL WORK. M. Tu. W. Th. Sat. Clinical instruction in diseases of the ear, nose, and throat is given in the dispensary and by hospital clinics by means of direct examination of patients under the supervision of instructors, who personally teach each student proper methods of examination and the correct interpretation of his observations. Sawtell, Hall, Roberts, McCarty.

OPHTHALMOLOGY.

1.—PHYSIOLOGICAL OPTICS. One hour credit. Instruction is given second-year students in physiological optics; vision tests, color tests, the taking of the field of vision, etc. Optical boxes, artificial eyes, ophthalmoscopes and suitable apparatus are provided for all physiological work and study. The course consists of laboratory work and demonstrations under the professor of physiology in the regular course in physiology.

2.—LECTURES, DEMONSTRATIONS, AND CLINICAL WORK IN DISPENSARY. Two hours credit. Both semesters. The course covers the method of examining the patient, functional testing, diseases, and injuries, medical and surgical ophthalmology, and the relation of the eye to general diseases. Required of third-year students. Curran.

3.—PRACTICAL WORK. One hour credit. Both semesters. Clinics are given in the Bell Memorial Hospital. The students are divided into small sections and each individual has the opportunity of closely inspecting the patients suffering from external diseases of the eye, of making the commoner applications used in the treatment, of assisting in the operating room, of studying refractive errors, functional testing, etc. Required of fourth-year students. Curran.

TOTAL HOURS OF INSTRUCTION, 838. Anesthetics 9, Minor surgery 36, General surgery 36, Regional surgery 54, Fractures and dislocations 36, Orthopedic surgery 18, Genito-urinary surgery 36, Surgical pathology 54, Operative surgery 144, Surgical diagnosis 36, Surgical conferences 18, Rectal surgery 9, Clinical surgery 144, Amphitheater clinics 144, Ear, nose, and throat 16, Eye 16, Ear, nose, throat, and eye clinics 32.

OBSTETRICS AND GYNECOLOGY.

Professors: GUFFEY, NASON.

Assistant Professor: IRLAND.

Instructor: VANORDEN.

Instruction in the principles of obstetrics and gynecology is given by means of lectures, recitations, and demonstrations. Clinical instruction is given in the dispensary and wards of the Bell Memorial and Bethany hospitals. Further practical instruction in obstetrics is obtained through the out-patient department.

SECOND YEAR.

1.—PHYSIOLOGICAL OBSTETRICS. Two hours credit. Second semester, M. W., at 1. Lectures and recitations. Required of second-year students. Ireland.

THIRD YEAR.

2.—PATHOLOGICAL OBSTETRICS. Two hours credit. Fall term, W. S., at 9. Lectures, recitations, and demonstrations. Required of third-year students. Guffey.

3.—DISEASES OF THE FEMALE GENITAL TRACT. Two hours credit. Second semester, W. S., at 9. Lectures, recitations, and demonstrations of illustrative pathological material. Required of third-year students. Guffey.

4.—OPERATIVE OBSTETRICS. One hour credit. Second semester, F., at 1. Recitations, demonstrations, and practice on the manikin by the student. Required of third-year students. Ireland.

5.—OBSTETRICAL AND GYNECOLOGICAL PATHOLOGY. Two hours credit. First semester, M., 2 to 5. A course devoted to the study of gross and microscopic pathology with special reference to specimens removed from patients operated upon before the class. Required of fourth-year students. Major, Guffey.

THIRD AND FOURTH YEARS.

6.—DISPENSARY.—One hour credit. A minimum of eighteen hours is required. A course devoted chiefly to history taking, the technique of examination, and the treatment of ambulatory patients. Students assigned in groups. Guffey, Ireland and Vanorden.

7.—PRACTICAL WORK IN OBSTETRICS. The conduct of two births in a hospital and eight on the out-patient service is required before graduation. Assigned work. Nason, Guffey, Ireland, Vanorden.

FOURTH YEAR.

8.—CLINICAL CONFERENCE IN OBSTETRICS AND GYNECOLOGY. Two hours credit. Both semesters, Th. 3 to 5. An exhaustive consideration of all cases in the Bell Hospital. Also, reports and discussions of case histories and important abnormalities met with in the out-patient service. Required of fourth-year students. Guffey.

9.—CLINICS IN OBSTETRICS AND GYNECOLOGY. Two hours credit. Both semesters, F., 9 to 12. This course logically follows course 6, as the same patients are further examined, given treatment, or operated upon. Students present histories, assist with operations, and make full reports of pathological findings, operative technique, or treatment. Required of fourth-year students. Guffey.

TOTAL HOURS OF INSTRUCTION, 272. Gynecology: didactic 32, clinical 77, laboratory 16, total 115. Obstetrics: didactic 86, clinical 77, laboratory 16, total 179. Total didactic 118, clinical 154, laboratory 32.

TRAINING SCHOOL FOR NURSES.

FACULTY.

FRANK STRONG, Ph. D., President.

S. J. CRUMBINE, M. D., Dean, School of Medicine.

M. T. SUDLER, M. D., Associate Dean, School of Medicine.

S. MILO HINCH, R. N., Superintendent of Bell Memorial Hospital, Supervisor of Nurses.

WILLIAM KIRK TRIMBLE, M. D., Lecturer on Pathology.

WALTER S. SUTTON,* A. M., M. D., Lecturer on Surgery.

MARY EDNA DARLAND, A. B., M. D., Instructor in Anatomy.

DON CARLOS GUFFEY, A. M., M. D., Instructor in Medicine and Obstetrics.

This School was established in July, 1906, with the opening of the Bell Memorial Hospital. It is a division of the School of Medicine of the University of Kansas, and subject to the same governing bodies.

EQUIPMENT.

The present hospital building contains sixty-five beds. The hospital receives all classes of patients except those suffering from dangerous contagious diseases or mental troubles, and shows a great variety of work. Also, since it is a teaching hospital, the character of the work shown is more instructive than that shown ordinarily in private hospitals.

The close proximity of the laboratory, library, and other equipment of the School of Medicine affords great advantage in the way of medical information and instruction.

ADMISSION.

Women of good character between the ages of twenty and thirty are eligible for admission. Those with a high-school education are given preference. Those who are accepted are accepted with the understanding that they must spend a probationary period of three months in the school, during which time they will receive board, laundry, and lodging, but no other compensation, and that they agree to remain in the school, unless dismissed, the full term of two and a half years.

The didactic instruction begins October 1 and ends June 1 of each year, but students are admitted at any time when there is a vacancy.

Any young woman who wishes to enter the school must make formal application to the supervisor of nurses of the Bell Memorial Hospital, Rosedale. With this application should be sent letters showing what educational advantages she has enjoyed, testifying to her good moral character, and to her good health. These letters should preferably be from her instructor and her medical attendant.

ADVANCED STANDING. Candidates for advanced standing must satisfy the requirements for admission and also show that they have had the work already done by the class to which they wish admission. An official statement of character and ability from the training school giving the previous work will be required. There will be required of them, as of beginners, a probationary period, and they will be required to pass an examination on the work for which they seek credit.

COURSE OF STUDY.

The course is for two and a half years. It is customary to grant the members of the first- and second-year classes a vacation of three weeks each year, and two weeks during the last six months.

* Died November 10, 1916.

The instruction consists of two parts—the practical and the theoretical. The practical work consists of sixty hours' work each week. The theoretical instruction requires four hours of lectures or recitations each week, together with the necessary laboratory work in dietetics, etc. This theoretical instruction includes the necessary work in anatomy, physiology, hygiene, medicine, pediatrics, obstetrics, etc.

HOURS OF INSTRUCTION.

	<i>Juniors.</i>	<i>Intermediate.</i>	<i>Seniors.</i>
Hygiene and nursing ethics.....	4	..	4
Theory and demonstration—nursing.....	32	32	..
Anatomy and physiology.....	32	..	..
Materia medica	20	..	..
Ward solutions	2	..	..
Urinalysis .....	..	6	..
Bacteriology	16	..	..
Laboratory	6	..	..
Obstetrical and Gynecological.....	..	32	..
Chemistry	10	..	..
Pediatrics .....	..	15	..
Surgery .....	..	8	..
Bandaging .....	..	4	..
Dietetics	40	..	..
Nervous diseases .....	..	..	6
Ear, nose, and throat.....	..	..	5
Eye .....	..	..	5
Massage .....	..	..	15
	162	97	35

PROMOTION.

Students are advanced upon the obtaining of satisfactory grades in their practical work and upon their passing satisfactory examinations in their theoretical work. Reports on the practical work are made monthly and those on the theoretical work semiannually.

GRADUATION.

At the close of a successful course of two and a half years the students are granted a diploma under the seal of the University of Kansas. Before they receive such a diploma they must make up lost time and demerits charged against them during the course.

EXPENSES.

Each nurse must furnish her own uniform, books and instruments.* To cover such professional expenses each member of the training school is allowed \$7 a month. From this compensation is deducted, of course, the cost of material unnecessarily broken or lost. Since the board, lodging, and necessary laundry work are furnished free, the pupil nurse secures her training at little or no expenditure of money.

* These instruments consist of 1 hypodermic syringe (all glass), 1 pair of bandage scissors, 1 pair of small scissors, 1 probe, 2 thumb forceps.

SECTION IX.
School of Education.

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FACULTY.

FRANK STRONG, Ph. D., President.
FREDERICK J. KELLY, Ph. D., Dean and Professor of Education.
ARVIN OLIN, A. M., Professor of Education.
EDWIN M. HOPKINS, Ph. D., Professor of Rhetoric and English Language.
ERASMUS HAWORTH, Ph. D., Professor of Geology.
ARTHUR T. WALKER, Ph. D., Professor of Latin Language and Literature.
WILLIAM A. GRIFFITH, Professor of Drawing.
WILLIAM H. JOHNSON, A. M., Professor of Education.
JAMES NAISMITH, M. D., Professor of Physical Education.
ELMER F. ENGEL, A. M., Professor of German.
ELIZABETH C. SPRAGUE, Professor of Home Economics.
WILLIAM B. DOWNING, Professor of Public School Music.
RAYMOND A. KENT, A. M., Professor of Education.
FREDERICK R. HAMILTON, Ph. B., Director University Extension Division.
HANNAH OLIVER, A. M., Associate Professor of Latin.
RAYMOND A. SCHWEGLER, A. M., Associate Professor of Education.
ELISE NEUENSCHWANDER, Ph. D., Associate Professor of Romance Languages.
ULYSSES G. MITCHELL, Ph. D., Associate Professor of Mathematics.
HUBERT W. NUTT, A. M., Associate Professor of Education.
EDWIN F. STIMPSON, B. S., Assistant Professor of Physics.
RALPH E. CARTER, A. M., Assistant Professor of Education.
GEORGE W. STRATTON, Ph. D., Assistant Professor of Chemistry.
CHESTER A. BUCKNER, A. M., Assistant Professor of Education.
WILLIAM L. EIKENBERRY, S. B., Assistant Professor of Secondary Biological Science Teaching.
FRANK E. MELVIN, Ph. D., Assistant Professor of European History.

ADMINISTRATIVE COMMITTEE.

F. J. KELLY, *Chairman.*

A. T. WALKER.

W. H. JOHNSON.

R. A. SCHWEGLER.

U. G. MITCHELL.

ELIZABETH SPRAGUE.

R. E. CARTER.

F. E. MELVIN.

The School of Education.

RELATION WITH THE COLLEGE OF LIBERAL ARTS AND SCIENCES.

The School of Education works in intimate relationship with the College of Liberal Arts and Sciences. The academic courses which enter into the preparation of teachers and school administrators are offered by the College, while the professional courses in education are offered by the School of Education.

Two classes of students enroll in the School of Education: First, those who are candidates for the degree of bachelor of science in education, granted by the School of Education; and second, those who are candidates for the University teachers' diploma, granted by the School of Education, and for the degree of bachelor of arts, granted by the College. Students of the first class enroll in the School of Education for all of their work at the beginning of the Junior year at the University. Students of the second class enroll in the College during the entire undergraduate period of their attendance at the University and enroll in the School of Education only for their courses in education. Such students must adjust their College courses, however, so as to meet the requirements of the University teachers' diploma.

RELATION WITH THE KANSAS STATE NORMAL SCHOOLS.

Students with advanced standing from any of the Kansas State Normal Schools, entering the School of Education as candidates for the degree of bachelor of science in education, will be given credit, hour for hour, for courses in the Normal Schools approved by the joint committee of the Normal Schools and the University. What these courses are may be learned by inquiry either from the Normal School concerned or from the University.

DEGREE IN EDUCATION.

The degree of bachelor of science in education may be granted to students who complete either of the two optional courses prescribed below, provided in the record of scholarship in all the work offered for the degree there are at least sixty hours of grades A and B together, and no more hours of grade D than there are hours of grade A.

Courses in the College and the School of Education Required for the Degree of Bachelor of Science in Education.

OPTION I.—FOR SCHOOL SUPERINTENDENTS AND PRINCIPALS.

	Student credit hours.	Reduction by high-school work.*	Specific requirements.
English.....	20	15	_____
Public Speaking.....	4	.....	Extempore Speaking.
Foreign Language.....	15	15	_____
Mathematics.....	10	10	_____
Physical Science.....	10	10	From 2 different sciences.
Biological Science.....	10	10	From 2 different sciences.
History.....	18	10	American Government, 5 hours; and Elementary Law, 3 hours; or Municipal Government, 3 hours.
Economics.....	8	.....	Elements of Economics, 5 hours; and Public Finance, 3 hours; or Elements of Accounting, 3 hours.
Sociology.....	7	.....	Elements of Sociology, 3 hours; and from the following, 4 hours: Social Surveys, 2 hours; Rural Sociology, 2 hours; Municipal Sociology, 2 hours; Social Pathology, 2 hours.
Philosophy and Psychology..	5	.....	General Psychology, 3 hours.
Major.....	30	.....	History of Education, 3 hours. Educational Psychology, or Psychology of High School Subjects, 3 hours. Abnormal Child, 3 hours. Technique of Teaching, 2 hours. Supervision of Instruction, or City-school Administration, 2 hours. Educational Organization and Administration or High-school Administration, 3 hours. Educational Measurements, 2 hours. School Hygiene, 3 hours. Theory of Social Measurements, 1 hour. Elective from all education groups, 8 hours.†
Minor.....	20	.....	Must be in a subject commonly included in the high-school curriculum.
Electives.....	.....	.....	To bring total of College and School of Education hours to 120.

*At rate of 5 hours per high-school unit.

†A teachers' course and senior teaching are required of those without teaching experience.

Courses in the College and the School of Education Required for the Degree of Bachelor of Science in Education.

OPTION II.—FOR TEACHERS.

	Student credit hours.	Reduction by high-school work.*	Specific requirements.
English.....	20	15	_____
Public Speaking.....	2	.....	Extempore Speaking.
Foreign Language.....	20	20	_____
Mathematics.....	10	10	_____
Physical Science.....	10	10	From 2 different sciences.
Biological Science.....	10	10	From 2 different sciences.
History.....	10	10	_____
Economics.....	5	.....	_____
Sociology.....	5	.....	_____
Philosophy and Psychology..	5	.....	General Psychology, 3 hours.
Home Economics..... (For women students.)	2	.....	Home Sanitation, or Home Decoration.
Drawing.....	3	3	Free-hand Drawing.
Education.....	30	.....	History of Education, 3 hours. Educational Psychology, or Psychology of High School Subjects, 3 hours. Technique of Teaching, 2 hours. Adolescence, 3 hours. High School Administration, 3 hours. Social Education, 2 hours. Teachers' Course and Senior Teaching, 5 hours. Elective from all education groups, 9 hours.
First Minor.....	25	.....	_____
Second Minor.....	15	.....	_____
Electives.....			To bring total of College and School of Education hours to 120.

*At rate of 5 hours per high-school unit.

UNIVERSITY TEACHERS' DIPLOMA AND STATE TEACHERS' CERTIFICATE.

The University teachers' diploma is accepted by the State Board of Education and legally qualifies the candidate for the state teachers' certificate. Regular teachers in all four-year high schools in Kansas must have the state certificate, which is granted without examination only to persons completing a four-year college course.

On recommendation of the Faculty of the School of Education, the University teachers' diploma may be granted to graduates of the College, and to those receiving degrees from the Graduate School, on the following conditions:

1. Candidates for the University teachers' diploma are required to offer as part of their work, philosophy I (elements of psychology), or its equivalent, three hours in history or education, three hours in educational psychology, three hours in educational administration, three additional hours in one or more of the three preceding groups, a teachers' course in some academic subject, and a course in senior teaching, a total of at least eighteen hours exclusive of senior teaching. On petition to the Faculty of the School of Education teachers who have taught success-

fully in high school may substitute other education courses for senior teaching.

2. Candidates for the University teachers' diploma and the bachelor of arts degree must offer 125 hours of undergraduate work.

3. In the record of scholarship in all the work offered for the teachers' diploma (125 hours) there must be at least sixty hours of grades A and B together, and no more hours of grade D than there are hours of grade A.

Note that the three hours in educational psychology, and three hours in history of education, *must* be taken before one may enter the other required work in education.

THE STATE TEACHERS' CERTIFICATE.

Graduates of the University of Kansas must secure a state teachers' certificate from the State Board of Education before they may legally teach in any of the four-year high schools in Kansas. Upon application to the State Board of Education, graduates of the University holding either the degree of bachelor of science in education or the University teachers' diploma are granted the state teachers' certificate without examination.

ADMISSION.

For admission into the School of Education (except for courses 1 and 2, which are open to Sophomores), either by candidates for the degree of bachelor of science in education or by candidates for the University teachers' diploma, the completion of an approved four-year high-school course and at least sixty credit hours of college work in institutions approved by the University, are required. This college work must include:

General Psychology, 3 hours.

Elements of Economics, 5 hours.

Elements of Sociology, 3 hours.

Applicants for admission to the courses in education who are deficient in a small portion of these requirements may be admitted conditionally at the discretion of the Dean.

ADVISERS.

Every student in the School of Education selects the courses for which he enrolls each semester, with the advice and approval of some member of the Faculty, who is called an adviser.

Students who are candidates for or who expect to become candidates for the degree of bachelor of science in education should observe the following suggestions concerning advisers.

Those planning to become superintendents or principals should be advised concerning their courses by one of the following: Mr. Johnson, Mr. Buckner, or Mr. Kent.

Those planning to become teachers of courses in education in high school, normal school or college should be advised by one of the following: Mr. Olin, Mr. Carter, or Mr. Nutt.

Those planning to become teachers of special classes for subnormal children should be advised by Mr. Schwegler.

Those planning to become teachers of the regular academic subjects in high school, normal school, or college should be advised by the representative of the student's first minor department who conducts the teachers' course in that department.

Students who are candidates for or who expect to become candidates for the University teachers' diploma should be advised by the head of the student's major department or by some one in the department designated by the head.

BUREAU OF EDUCATIONAL SERVICE.

One of the chief functions of a School of Education in a State University is to render such service as it can in helping the school superintendents and teachers of the state to solve the practical problems which arise in their work. In order to systematize the efforts of the School of Education along this line the Bureau of Educational Service is organized. The bureau invites the school people to address it concerning their educational problems of whatever nature. The bureau also offers to lend its aid in carrying on such investigations as the people in charge of the public schools wish to conduct. Furthermore, it provides a medium through which the results of educational investigations made anywhere in the state are made most widely available to the rest of the state.

SCHOOLMEN'S CONFERENCE AT THE UNIVERSITY.

The School of Education has in charge the Annual High-school Conference, which meets in March of each year.

RECOMMENDATION OF TEACHERS.

The University endeavors to assist those of its graduates who desire to teach in securing positions, and at the same time to be of service to high schools, academies, and colleges which may be in need of competent instructors. To this end a representative committee of the Faculty of the School of Education preserves a complete list and record of graduates who are engaged in teaching or have fitted themselves especially for such work. The University authorities are thus prepared at any time to recommend persons who are well qualified for any position as teacher. In so doing great care is exercised, the special qualifications of various teachers for the particular position in hand being in every case fully considered.

Records are kept of every detail of the student's qualifications for teaching, including the estimate of all college professors of the scholarship, personality, strength of character, and general adaptability of the candidate, as well as critical estimates of his teaching ability, indicated by his practice teaching in Oread Training School.

The committee urges members of school boards and school administrators to come to Lawrence in person when possible, so that personal conferences with both University instructors and the candidates for teaching may insure mutual satisfaction and be a guarantee of effective service.

The committee has adopted the policy, in its official recommendations, of attaching special importance to graduate study in the professional preparation of teachers.

EQUIPMENT.

The School has a growing educational museum of considerable value, including ancient and modern textbooks, former and present-day school appliances and equipments, maps and charts, a good deal of which is frequently in use in the Training School. There are over five thousand volumes in the University library classified under the title "Education." This equipment is being greatly augmented through the acquisition of the files of leading French and German educational periodicals and classical treatises. The School of Education makes constant use of the stereopticon and numerous lantern slides, and has a rapidly growing collection of stereographs with stereoscopes for illustrating their proper use in the schools. A special room for this work, fitted up as a dark room, is reserved for such use by members of the Faculty of Education. Forty-five weekly or monthly educational periodicals come to the

library. There are complete files of the leading American periodicals and the files of the leading English, French, and German periodicals are being completed. In addition to the usual library facilities, a commodious seminary room and an alcove in the reading room of the library are reserved for the use of the several departments within the School of Education. The seminary room is equipped with separate card index system and is under the direction of a trained library attendant.

OREAD TRAINING SCHOOL.

As a laboratory for the science of education there is maintained as a part of the School of Education a typical high school under the name Oread Training School. It is supported partly by students' fees and partly by the state. It is housed in a separate building which was erected during the summer of 1915. The school is designed to exemplify for prospective teachers, and for visiting teachers, principals, and superintendents, the equipment, organization, curriculum, and methods of instruction advocated by the School of Education.

University students with deficiencies may make these up in the school. Any student who has completed the eighth grade in the public schools, or its equivalent, is eligible to admission. Those who have credits for high-school work done elsewhere will be admitted to those advanced courses for which their previous work qualifies them.

GRADUATE POLICY OF SCHOOL OF EDUCATION.

The progressive tendency in many states is to encourage teachers and school administrators to continue in some university advanced research in education. The most vital discoveries in this field must finally be made by those on the ground—teachers in active service. This work creates a demand for those who have had training in the methods of investigation and in the interpretation of the data collected.

Upon the basis of an agreement between the University and the Kansas State Normal Schools graduates of the Kansas State Normal Schools may enter the graduate school unconditionally (a few courses excepted) as candidates for the degree of master of science in education.

The School of Education provides instruction suited to the needs of graduate students in educational psychology, history and philosophy of education, educational administration, and in the principles of teaching the various academic and technical subjects. In accordance with the regulations of the Graduate School, students may pursue, as a major or minor, advanced work in any of these subjects. The master's degree usually requires one year of graduate work; the doctor's degree, three years. Work leading to these higher degrees, with education as a major, is planned in such a way as to afford preparation for responsible positions, particularly those involving administrative and supervisory duties and teaching of education in colleges and normal schools. Graduate work, undertaken with the major in some academic subject and the minor in education, is usually planned in such a way as to afford desirable equipment for the teaching of special branches.

All work for the higher degrees with education as major should be planned carefully from the beginning, in consultation with the Dean of the School of Education. Graduate work may be done in the Summer Session.

Suggested order of electing courses to meet the requirements for the Degree of Bachelor of Science in Education.

FRESHMAN YEAR.

English	5 hours.
Economics	5 hours.
Courses to satisfy requirements in Foreign Languages, Mathematics, Physical Sciences, Biological Sciences, and History, if any such requirements exist.....	5 to 10 hours.
Minors	5 to 15 hours.

SOPHOMORE YEAR.

Complete the requirements, if any remain, in English, Foreign Languages, Mathematics, Physical Sciences, Biological Sciences, and History.	
Psychology	5 hours.
Home Economics (for women).....	2 hours.
Drawing	3 hours.
Sociology	3 hours.
Minors	5 to 15 hours.

JUNIOR YEAR.

Public Speaking	2 to 4 hours.
Sociology	2 hours.
Education	9 to 15 hours, including History of Education and Educational Psychology.
Minors	5 to 15 hours.

SENIOR YEAR.

Complete the requirements specified in the course selected.

DESCRIPTION OF COURSES.

Sophomore Courses.

To meet the demands of the School of Fine Arts, in which certain teachers' certificate requirements are fulfilled in two years of work above high school, and to enable sophomore students in the College, who find it necessary to leave college and begin teaching, to meet the requirements of the State Board of Education for a three-year certificate, courses 1 and 2 are offered by the School of Education. The certificate thus secured is valid only in elementary schools, junior high schools, and two-year high schools, except that those completing the special two-year course in some special subject receive a certificate valid for teaching that subject in any of the high schools of the state. These courses will not be counted for credits toward the University teachers' diploma unless the student has taught at least one year on the certificate which the courses were used to secure.

1.—METHODS OF TEACHING. Three hours credit. Second semester, 10:30. This course will deal with those fundamental principles of method that will be most helpful to teachers in the organization and presentation of subject matter. The illustrative materials will be taken from a wide range of subjects, but the emphasis will be upon the problems that pertain particularly to the elementary schools. Nutt.

2.—ELEMENTARY EDUCATION. Three hours credit. Second semester, 4:30. The purpose of the course is to give the prospective teacher in elementary schools a general appreciation of the aim, scope, and setting of elementary education and the more necessary information on the internal organization of the elementary school. Kent.

Junior, Senior, and Graduate Courses.

The following courses are so arranged as to enable students to plan for their advanced work for their Junior year, with reference to three fairly distinct aspects of education: the historical, the scientific and theoretical, and the administrative. One course in history of education (50 or 51) and one course in educational psychology (64), or psychology of high-school subjects (75) are prerequisites for all other courses in the School of Education. Advanced credit from other universities or colleges, or from normal schools, will be granted as consideration of the individual cases may warrant. Such students should consult the Dean of the School before enrolling.

HISTORY OF EDUCATION.

50.—HISTORY OF ANCIENT AND MEDIAEVAL EDUCATION. Three hours credit. First semester, 8:30, 3:30. This course is a study of educational principles and practice, systems, and educational theorists among ancient and mediæval people. It includes the important features of Oriental, Greek, Roman, early Christian, and Saracenic education, the renaissance of learning under Charlemagne, the rise of universities, and the early phases of the Renaissance movement. Olin.

51.—HISTORY OF MODERN EDUCATION. Three hours credit. First semester, 2:30; second semester, 8:30, 3:30. Doctrines and systems developing from the educational reforms and reformers of the seventeenth century, including Bacon, Comenius, and other innovators. Decline and

restatement of humanism in the eighteenth century, the strengthening of realism, and the institutional development growing out of these changes. The educational evolution of the nineteenth century in Germany, France, England, and America under such leaders as Pestalozzi, Guizot, Arnold, Spencer, and Mann. Olin.

59.—EDUCATIONAL CLASSICS. Two hours credit. First semester, 10:30. A critical and historical study of selected dialogues of Plato, and of the educational writings of Locke. An attempt will be made to trace the relation between the opinions of these two writers and the educational theory and practice of the age in which each lived. Olin.

60.—EDUCATIONAL CLASSICS. Two hours credit. First semester, 10:30. An intensive study in their historical setting of the educational writings of Rousseau and Spencer. Olin.

63.—EDUCATION IN AMERICA. Three hours credit. Second semester, 9:30. A study of the origin and development of educational ideas, institutions, and systems in the colonial period; the evolution of the academy, high school, and professional school; the education of girls and women; manual and vocational instruction; and the work of leading educators and theorists: Mann, Willard, Lyon, Howe, Gallaudet, Barnard, Elliot, Harris. Olin.

102.—SEMINAR. Educational systems of Herbart and Froebel. Two hours credit. Second semester, by appointment. Olin.

103.—SEMINAR. Origin and early development of Universities. Two hours credit. Second semester, by appointment. Olin.

EDUCATIONAL THEORY.

54.—EDUCATIONAL CLINIC. Three hours credit. Second semester, by appointment. By the kindly coöperation of neighboring schoolmen it has been possible to provide for mature students an opportunity for the direct study of typical cases of exceptional mental development. Tests for various mental functions will be demonstrated, and the Binet-Simon, Yerkes-Bridges, and other scales of tests will be used to determine psychic normality. Schwegler.

55.—MENTAL MEASUREMENT OF INDIVIDUAL SCHOOL CHILDREN. Three hours credit. First semester, 11:30. A study of the theory and practice of mental measurement. The course deals especially with the problems of mental deficiency, exceptional endowment, and vocational guidance. Schwegler.

64.—EDUCATIONAL PSYCHOLOGY. Three hours credit. Second semester, 1:30. Not open to students who have taken course 75. The processes usually treated in general psychology will be considered in their relation to the technique and economy of learning. Habit formation and thought will receive especial attention in their connection with the study of school subjects. Lectures, experiments, reading, and discussion. Carter.

65.—GENETIC PSYCHOLOGY FOR TEACHERS. Two hours credit. First semester. The purpose of this course is to present the facts of mental development and to summarize the results of experimental investigations and reliable observations which suggest direct educational applications. (Not given in 1916-'17.)

67.—ADVANCED EDUCATIONAL PSYCHOLOGY. Two hours credit. First semester, 9:30. A more intensive treatment of parts of courses 64 and 75. In a sense it is a laboratory course supplementing them. Opportunity will be given the student to spend practically a third of his time in reading and working on some special interest. Carter.

68.—THE PRINCIPLES OF EDUCATION. Three hours credit. Second semester, 9:30. An analysis of educational norms in theory and practice in the light of the facts of biology, psychology, and sociology. Lectures, library studies, written reports. Schwegler.

69.—TECHNIQUE OF TEACHING. Two hours credit. First semester, 3:30. A careful study of the fundamental principles of classroom instruction will be made. The Training School will offer abundant opportunities for demonstrative and illustrative material. The course is designed to supplement the work of teachers' courses and to correlate as much as possible with practice teaching. Nutt.

71.—THE ABNORMAL CHILD.—Three hours credit. First semester, 9:30. The growth and development of children are studied with special reference to the nature and causes of arrest as found in backward, defective, and degenerate children. This course is intended for mature students who are preparing themselves for executive positions in town and city schools. Lectures, and visits to various institutions maintained by the state for defective and delinquent children. Schwegler.

75.—PSYCHOLOGY OF HIGH-SCHOOL SUBJECTS. Three hours credit. Both semesters. First semester, 9:30, 1:30; second semester, 9:30, 2:30. (May be taken instead of course 64 as the state and school requirement in educational psychology, but not open to students who have had course 64.) This course differs from course 64 chiefly in the organization of material. Instead of making the different mental processes the basis of organization for the discussion of learning in the schools, the high-school subjects are treated separately with reference to the mental processes and psychological principles involved. Carter.

78.—ADOLESCENCE. Three hours credit. Both semesters, 10:30. A detailed study of the physical, social, and psychological aspects of adolescence. The course will lay special stress on the problems of physical and mental hygiene, as they appear in the physical, intellectual, social, and religious development of the adolescent. Schwegler.

79.—MORAL EDUCATION. Two hours credit. Second semester, 7 to 9 p. m., Wednesday. A critical study of the underlying psychological forces, both conscious and unconscious, which govern the development of habits of thought and action, followed by a review of prevailing systems of moral education. Schwegler.

100.—SEMINAR IN EDUCATIONAL PSYCHOLOGY. Two hours credit. Both semesters, hours by appointment. Students may spend their time in an intensive study of recent investigations in an educational problem involving psychological principles and methods, or in an actual investigation of such a problem. Carter.

101.—SEMINAR IN MENTAL DEFECTS. Two hours credit. Both semesters, by appointment. An opportunity for mature students to make a special study of certain forms of irregular mental life frequently met in grade and high-school work. Schwegler.

EDUCATIONAL ADMINISTRATION.

52.—EDUCATIONAL MEASUREMENTS. Two hours credit. Second semester, 11:30. This course involves a consideration of the standards and scales for the measurement of educational attainment, together with the technique of applying these to educational products. Buckner.

53.—SOCIAL EDUCATION. Two hours credit. Second semester, 9:30. A study of the response of the school to changing social demands, and the initiative which it should take in creating better social conditions. The purpose of the course is to acquire a workable theory of education for social progress and to survey practical applications of this theory. Carter.

56.—VOCATIONAL EDUCATION AND GUIDANCE. Three hours credit. First semester, 2:30. The development of vocational education in Europe and America; its organization and administration; the relation of the school system to the various industries of the community; the relation of indus-

trial education to vocational guidance; the consideration of the various theories for the adjustment of educational means to vocational aptitudes. Johnson.

57.—SCHOOL HYGIENE. Three hours credit. Second semester, 3:30. The work of this course will be considered under three principal divisions: (1) Schoolroom sanitation; (2) Personal hygiene of school children; (3) Mental hygiene of school children. Nutt.

58.—NATIONAL EDUCATIONAL SYSTEMS. Three hours credit. Second semester, 2:30. A study of the organization and administration of the school systems of Germany, France, and England, including elementary, secondary, and higher schools. The educational institutions of these countries and the methods of controlling and administering them will be compared with each other and with the corresponding institutions in the United States. Johnson.

61.—HIGH-SCHOOL ADMINISTRATION. Three hours credit. Both semesters. First semester, 8:30; second semester, 8:30, 11:30. The purpose of this course is to present the practical problems in the administration of the high school. The relationship between school and community and plans for greater coöperation between the school and the home will be discussed. Each member of the class will be expected to make a rather detailed study of some high-school problem in which he is especially interested. Johnson, Buckner.

62.—THE HIGH-SCHOOL CURRICULUM. Two hours credit. First semester, at 11:30. A study of the problems involved in the selection and organization of the subject matter taught in the high school. The theoretical and practical aspects will be considered in the light of recent tendencies. Special attention will be given to the curriculum of the junior high school. Buckner.

66.—EDUCATIONAL STATISTICS. Three hours credit. First semester, 11:30. A study of statistical method as applied to educational problems. This course dovetails with seminar courses in educational administration, educational psychology, secondary education, and mental defects, in which problems requiring statistical treatment are studied. Buckner.

70.—SCHOOL SURVEYS. Three hours credit. First semester, 8:30. A study of the kinds, purposes, methods and results of school surveys. This includes a study of selected parts of standard surveys and a consideration of types of practical survey work possible by regular administrators in ordinary school systems. Open only to experienced public-school administrators. Kent.

72.—SUPERVISION OF INSTRUCTION. Two hours credit. First semester, Sat., 9:30. Principles and standards of supervision with concrete application of same to actual work observed. Particular attention is given to standard methods of measuring teaching and the teaching product. Open only to those having had teaching experience. Kent.

73.—CITY SCHOOL ADMINISTRATION. Two hours credit. Second semester, 8:30. An intensive study of some of the more common and important problems met with in administering a city school system. The problems taken up are studied in the light of scientific principles of educational administration. Kent.

74.—EDUCATIONAL ORGANIZATION AND ADMINISTRATION. Three hours credit. Second semester, 2:30. Among the topics discussed are: relation of the national government to education in the states and insular possessions; state administrative organizations; local units of control; school costs and support; material equipment; recent legislation; administrative and supervisory officers; classification and promotion of pupils; period of attendance; physical education and health. Buckner.

76.—THEORY OF SOCIAL MEASUREMENTS. One hour credit. First semester, M., 3:30. An introduction to the theory of group measurements.

The chief aim is to acquaint the student with the terminology employed in recent educational literature dealing with measures of central tendency, variability, and correlation. Buckner.

77.—PRACTICAL PROBLEMS OF PUBLIC-SCHOOL EDUCATION. Credit to be arranged. Saturday morning at 10, both semesters. The work offered in this course is planned with special reference to the needs of actual teachers and administrators living in the vicinity of Lawrence. Vital problems in school work will be studied and interpreted in the light of modern scientific principles and methods of investigation. The work and the instructors will be arranged when the class first meets, September 29.

The amount of credit given will depend upon the work of the individual student.

This course is designed for those teachers and school supervisors who, although in actual service, desire to continue their professional development.

104.—SEMINAR IN EDUCATIONAL ADMINISTRATION. Two hours credit. Both semesters, by appointment. Kelly.

105.—SEMINAR IN SECONDARY EDUCATION. Two hours credit. Both semesters, by appointment. Buckner.

SPECIAL METHODS AND SENIOR TEACHING.

The prerequisites for all teachers' courses are not less than twenty nor more than twenty-five hours in the subject in which the teachers' course is given or in closely allied subjects, three hours in history of education, and three hours in educational psychology. All teachers' courses, not including credits for practice, shall be not less than two nor more than four hours in length for one semester, and shall be open to students of Senior and Graduate standing. By permission of the Dean a portion of the work described above as prerequisite may be taken at the same time with the teachers' course, and special mature students under certain conditions, with the approval of the Dean, may take other education courses in lieu of a teachers' course.

The items enumerated below are suggestive of the kinds of topics with which the following teachers' courses in special branches are concerned:

1. A simple statement of the broader aspects of the distinctive field of education, indicating the special adjustment of the moral, æsthetic, social, and practical disciplines to be reasonably expected from a study of the subject.

2. A brief sketch of the actual history of the subject in the school curriculum, showing the gradual change and improvements in the textbook presentations of the subject, and the gradual improvements in other apparatus than textbooks adopted for use in teaching it.

3. The gradual change in the conception of its educational value and the degree and nature of correlation with other subjects, particularly since the report of the Committee of Ten.

4. The growing refinement of methods for presenting the subject.

5. The grade preparation to be presupposed at present, its present status, as seen from a comparison of typical high-school curriculums, together with the social, psychological, and practical obstacles to its attaining its ideal educational aim.

6. The necessary, and also the more ideal, preparation called for in the teacher, academic and professional.

7. References to books and special monographs dealing with the topics of the course, and a suggested list of books desirable for reference for high-school libraries.

In addition to the instruction in the following specialized courses in the theory of teaching, a continuous period of not less than nine weeks of supervised teaching should be arranged for by students electing such

courses. Exceptional facilities are offered for this teaching in the Oread Training School.

81.—TEACHERS' COURSE IN BIOLOGICAL SCIENCES. Three hours credit. Both semesters, 11:30. The existing organization of high-school science courses and proposed reorganizations; the place and function of biological science in the high school; the conditions under which biology courses are usually given, and the organization of such courses; the methods, devices, books, and apparatus to accomplish the aims of biology teaching, and the arrangement and equipment of laboratories and classrooms. Lectures, classroom observation, reading, demonstrations. It is expected that the student will register for 81 and 81a in the same semester, in order that theory and practice may be closely correlated. Eikenberry.

81a.—SENIOR TEACHING IN BIOLOGICAL SCIENCES. Both semesters, hours to be arranged. Opportunity is offered for teaching in high-school botany, zoölogy, physiology, and agriculture. Should be elected in the same semester with 81. Eikenberry.

99.—TEACHERS' COURSE IN CHEMISTRY. Two hours credit. One hour each semester, by appointment. Pedagogics and technique of instruction in chemistry in the high school. Stratton.

99a.—SENIOR TEACHING IN CHEMISTRY. Both semesters, hours to be arranged. Stratton.

95.—TEACHERS' COURSE IN DRAWING AND DESIGN. Three hours credit. Prerequisite, courses 54, 51, and 1 in drawing. Griffith.

95a.—SENIOR TEACHING IN DRAWING AND DESIGN. Second semester, hours to be arranged. Griffith.

86.—TEACHERS' COURSE IN ENGLISH. Three hours credit. First semester, 2:30. The principles of teaching English composition, language, and literature; lectures, reference reading, conferences, visiting of classes and schools, reports, and final thesis. Hopkins.

The prerequisites in English for course 86 are courses 1, 2, 10, 11, 12, 13, 68, 78, and in advanced English composition five hours of any courses from 50 to 57 at option.

86a.—SENIOR TEACHING IN ENGLISH. Both semesters, hours to be arranged. Hopkins.

85.—TEACHERS' COURSE IN GERMAN. Three hours credit. Second semester, 9:30. Advanced grammar, with theory of language teaching. Intended especially for those who desire to fit themselves for teaching German in high schools. Engel.

85a.—SENIOR TEACHING IN GERMAN. Both semesters, hours to be arranged. Engel.

91.—TEACHERS' COURSE IN HISTORY. Three hours credit. First semester, 2:30, Tues. and Thurs.; third hour by appointment. A study in adapting historical and current social literature to the service of high-school students. High-school courses of study, methods of teaching, textbooks, reference books, and apparatus will be considered. Melvin.

91a.—SENIOR TEACHING IN HISTORY. Both semesters, hours to be arranged. Melvin.

83.—TEACHERS' COURSE IN HOME ECONOMICS. Three hours credit. First semester, 9:30. The history of the home economics movement, showing the reason for the diverse standards and aims to be found in the work in different schools. Special emphasis will be put on the high-school problem; the ground that should be covered and methods of presentation; the planning of equipment, of courses, and of typical lessons. Sprague.

83a.—SENIOR TEACHING IN HOME ECONOMICS. Both semesters, hours to be arranged. Sprague.

87.—TEACHERS' COURSE IN LATIN. Three hours credit. First semester, 2:30. The work consists of discussion of the best literature on the aims and methods of teaching Latin, and a critical examination of some textbooks used in secondary Latin teaching. Walker.

Those who wish to secure a special recommendation as teacher of Latin must elect at least twenty-five hours in the department of Latin beyond course 4; courses 5 and 13 must be included.

87a.—SENIOR TEACHING IN LATIN. Both semesters, hours to be arranged. Oliver.

89.—TEACHERS' COURSE IN MATHEMATICS. Three hours credit. Second semester, 11:30. It deals with the history, teaching, and mutual relations of the mathematical subjects usually taught in the public schools from the beginning of the seventh grade to the end of the high-school course. This course consists of (1) history of the teaching of mathematics, readings, and lectures; (2) a comparative study of the mathematical curricula of the schools of this country and of Europe; (3) discussions on the best methods of presenting the topics. Open to Seniors and graduates who have completed courses 62 and 7 in mathematics. Mitchell.

89a.—SENIOR TEACHING IN MATHEMATICS. Both semesters, hours to be arranged. Mitchell.

94.—TEACHERS' COURSE IN MUSIC.

Downing.

94a.—SENIOR TEACHING IN MUSIC.

Downing.

For public-school music course, see bulletin of the School of Fine Arts.

84.—TEACHERS' COURSE IN NORMAL TRAINING. Three hours credit. First semester, 3:30. This course will present outlines for psychology and methods courses as they are offered in high schools, discuss textbooks, and cover in detail the problems of teaching that are involved in such courses. Nutt.

82.—TEACHERS' COURSE IN PHYSICAL GEOGRAPHY. Two hours credit. Second semester, 9:30. The course includes a history of physical geography and physiography in public schools and methods of teaching them, laboratory work and outdoor observations which can be conducted in high schools, meteorological apparatus and weather reports, and best methods of studying land forms and land sculpture with high-school students. Haworth.

82a.—SENIOR TEACHING IN PHYSICAL GEOGRAPHY. First semester, hours to be arranged. Haworth.

97.—TEACHERS' COURSE IN PHYSICAL EDUCATION. Two hours credit. First semester, 9:30. Laboratory hours by appointment. A study of the principles of play, the classification of games, showing the grade for which each is adapted; and an analysis of the different games, showing the principles involved, and the attributes developed. The methods used in coaching and officiating, the locating, equipping, and organizing of playgrounds. Naismith.

97a.—SENIOR TEACHING IN PHYSICAL EDUCATION. Two hours credit. An analysis of gymnastic movements, showing their adaptation to the different grades; the method of combining these into drills, devising drills for special occasions and to suit varying conditions; organizing and conducting classes; and observation of methods by visitation and practice teaching with selected classes. Naismith.

80.—TEACHERS' COURSE IN PHYSICS. Three hours credit. Second semester, by appointment. Discussion of the proper subject matter of an elementary course in physics, and of the various methods of treating such matter in demonstration, recitation and laboratory. Members of the class will give from time to time demonstrations on assigned topics in elementary physics. Stimpson.

80a.—SENIOR TEACHING IN PHYSICS. Second semester, hours to be arranged. Stimpson.

88.—TEACHERS' COURSE IN ROMANCE LANGUAGES. Three hours credit. First semester, by appointment. Systematic review of grammatical principles from the point of view of the requirements of elementary instruction. Outlines of historical grammar. Study of the methods of teaching languages. Open only to students who give evidence of fitness for the work. NeuenSchwander.

88a.—SENIOR TEACHING IN FRENCH. Both semesters, by appointment. NeuenSchwander.

88b.—SENIOR TEACHING IN SPANISH. Both semesters, by appointment. NeuenSchwander.

For further information concerning the School of Education, address F. J. Kelly, Dean, University of Kansas.

SECTION X.
The Summer Session.

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FACULTY.

FRANK STRONG, Chancellor of the University and President of the Faculties.

FREDERICK JAMES KELLY, Director of the Summer Session and Professor of Education.

Instructors from Other Institutions.

CARDINAL GOODWIN, Ph. D., Head of the Department of History in the High School of Oakland, California.

GERTRUDE HAZEN, A. M., Head of Department of Home Economics, Howard-Payne Junior College, Fayette, Missouri.

C. L. ROBBINS, Ph. D., Professor of Education, New York Training School for Teachers.

W. L. SCHURZ, Ph. D., Assistant Professor of History, University of Michigan.

WILLIAM B. WILSON, M. S., Professor of Biological Science, Ottawa University.

Instructors from the University of Kansas.

JAMES WOODS GREEN, Professor of Law.

FRANK WILSON BLACKMAR, Dean of the Graduate School, and Professor of Sociology.

CHARLES GRAHAM DUNLAP, Professor of English Literature.

CARL ADOLPH PREYER, Professor of Piano and Composition.

OLIN TEMPLIN, Professor of Philosophy.

EDWIN MORTIMER HOPKINS, Professor of Rhetoric and English Language.

ERASMUS HAWORTH, Professor of Geology and Mineralogy.

ARTHUR TAPPAN WALKER, Professor of Latin Language and Literature.

WILLIAM CHASE STEVENS, Professor of Botany.

ARVIN SOLOMON OLIN, Professor of Education.

EUGENIE GALLOO, Professor of Romance Languages and Literature.

WILLIAM LIVESEY BURDICK, Professor of Law.

CHARLES SANFORD SKILTON, Professor of Organ, Theory of Music and Music History.

WILLIAM HAMILTON JOHNSON, Professor of Education.

FREDERICK EDWARD KESTER, Professor of Physics.

HAMILTON PERKINS CADY, Professor of Chemistry.

JOHN SUNDWALL, Professor of Anatomy.

HENRY WILBUR HUMBLE, Professor of Law.

FRANK BURNETT DAINS, Professor of Chemistry.

ELMER FRANKLIN ENGEL, Professor of German.

- JOHN NICHOLAS VAN DER VRIES, Professor of Mathematics.
WILLIAM OLIVER HAMILTON, Professor of Physical Education and General Manager of Athletics.
ARTHUR MACMURRAY, Professor of Public Speaking.
ELIZABETH CADE SPRAGUE, Professor of Home Economics.
RALPH H. MAJOR, Professor of Bacteriology and Pathology.
WILLIAM BELL DOWNING, Professor of Voice.
RAPHAEL DORMAN O'LEARY, Professor of English.
RAYMOND ALFRED SCHWEGLER, Professor of Education.
ARTHUR JEROME BOYNTON, Professor of Economics.
HARRY CONRAD THURNAU, Professor of Germanic Languages and Literatures.
RAYMOND A. KENT, Professor of Education.
LEON NELSON FLINT, Professor of Journalism.
GEORGE ELLETT COGHILL, Professor of Anatomy.
OLE OLUFSON STOLAND, Professor of Physiology.
WALTER SAMUEL HUNTER, Professor of Psychology.
WILLIAM MATHEWS HEKKING, Professor of Drawing and Painting.
WILLIAM JACOB BAUMGARTNER, Associate Professor of Zoölogy.
HENRY OTTO KRUSE, Associate Professor of German.
CLARENCE CORY CRAWFORD, Associate Professor of European History.
VICTOR EMANUAL HELLEBERG, Associate Professor of Sociology.
HERMAN CAMP ALLEN, Associate Professor of Chemistry.
CHARLES ALBERT SHULL, Associate Professor of Botany.
ULYSSES GRANT MITCHELL, Associate Professor of Mathematics.
GEORGE ELLSWORTH PUTNAM, Associate Professor of Economics.
HUBERT WILBUR NUTT, Associate Professor of Education and Principal of Oread Training School.
JOSEPH GRANGER BRANDT, Associate Professor of Greek.
NOBLE PIERCE SHERWOOD, Associate Professor of Bacteriology.
HARRIET GREISSINGER, Assistant Professor of Piano.
LULU GARDNER, Assistant Professor of Rhetoric.
HERBERT E. JORDAN, Assistant Professor of Mathematics.
WILLIAM REES B. ROBERTSON, Assistant Professor of Zoölogy.
HERBERT BARKER HUNGERFORD, Assistant Professor of Entomology.
PAUL VANCE FARAGHER, Assistant Professor of Chemistry.
EDMUND DRESSER CRESSMAN, Assistant Professor of Latin.
RALPH EMERSON CARTER, Assistant Professor of Education.
ANNA LOUISE SWEENEY, Assistant Professor of Piano.
HERMAN DOUTHITT, Assistant Professor of Zoölogy.
GEORGE WEATHERWORTH STRATTON, Assistant Professor of Chemistry.
CHESTER ARTHUR BUCKNER, Assistant Professor of Education.
ELLIS BAYLEY STOFFER, Assistant Professor of Mathematics.
WILLIAM MCGLASHAN DUFFUS, Assistant Professor of Economics.
BLAINE FREE MOORE, Assistant Professor of Political Science.
JOSEPHINE MAY BURNHAM, Assistant Professor of English.
FRANK E. MELVIN, Assistant Professor of History.
WILLIAM LEWIS EIKENBERRY, Assistant Professor of Education.
FREDERICK WILLIAM BRUCKMILLER, Assistant Professor of Chemistry.
HARRY VICTOR EMANUEL PALMBLAD, Assistant Professor of German.

MANUEL CONRAD ELMER, Assistant Professor of Sociology.
WINTHROP PERRIN HAYNES, Assistant Professor of Geology, Mineralogy,
and Petrology.
ROBERT MORSE WOODBURY, Assistant Professor of Economics.
PETER WALTER CLAASSEN, Assistant Professor of Entomology.
ALICE WINSTON, Instructor in Rhetoric.
HAZEL HELEN PRATT, Instructor in Physical Education.
LAURENS ELLIS WHITEMORE, Instructor in Physics.
AVIS GWINN, Instructor in Home Economics.
WALTER BLAINE BODENHAFFER, Instructor in Sociology.
ANNA GUNILLA SABY, Instructor in Romance Languages.
EVELYN FOGG OLCOTT, Instructor in Voice.
SANTIAGO GUTIÉRREZ, Instructor in Romance Languages.
LITA BATTEY, Instructor in Education.
PAUL BOWEN LAWSON, Instructor in Entomology.

ADMINISTRATIVE COMMITTEE.

F. J. KELLY, *Chairman*.

ARVIN OLIN.

A. T. WALKER.

P. F. WALKER.

F. W. BLACKMAR.

G. E. COGHILL.

H. L. BUTLER.

H. P. CADY.

The Summer Session.

PURPOSE AND PLAN.

1. Students recognize the advantage of reducing their college attendance below the traditional four years, and their attendance at professional schools to as few years as may suffice to complete the course, in order that they may enter into their professional careers as early in life as possible.

2. Persons who are engaged in business, such as salesmanship, banking, insurance, office management, transportation and the like, feel a need for systematic study of their problems.

3. Teachers of all ranks are anxious to improve their professional status.

The Summer Session is organized to meet the needs of these three classes. It is administered in two separate terms, a six-weeks term and a four-weeks term, for either one of which a student may enroll without enrolling for the other.

GENERAL INFORMATION.

RECREATION.

The gymnasium and the campus give ample facilities for recreation.

LECTURES AND ENTERTAINMENTS.

During the Summer Session frequent public lectures will be given by faculty members and others. Among the noteworthy features the following may be mentioned as of especial interest:

(1) Several eminent men have been engaged to address the general student body. Some of these men give one address, some a series of addresses. Notable among those engaged from outside the state are:

Ernest Burnham, professor of rural education, Western State Normal School, Kalamazoo, Mich.

T. N. Carver, professor of political economy, Harvard University.

J. M. Coulter, professor of botany, University of Chicago.

S. Herbert Hare, lecturer on landscape and garden design, Kansas City, Mo.

L. S. Hawkins, specialist in agriculture, University of the State of New York.

E. A. Ross, professor of sociology, University of Wisconsin.

David Snedden, professor of education, Teachers College, Columbia University.

(2) The Extension Division will provide, without cost to students, frequent entertainments with motion pictures. These entertainments, in addition to providing opportunity for relaxation, will demonstrate

the educational value of motion pictures. A wide variety of films will be shown. Persons interested in the possibility of securing motion-picture machines or other picture apparatus, such as the stereopticon, for their home schools may get information concerning cost, operation, securing of films, available educational films, and the like from the Director of the Extension Division.

(3) The School of Fine Arts will provide occasional musical and literary entertainments, including the work of the regular members of the faculty of the School of Fine Arts. Community singing will be a feature of some of these programs.

(4) The ever-popular Coburn Players will give a series of three plays. These will be out of doors if the weather permits.

SUMMER SESSION OF THE OREAD TRAINING SCHOOL.

Certain high-school classes will be conducted in Oread Training School from June 14 to August 15. Students may take either one or two subjects, reciting in each twice a day. The entire work of a semester will be completed in each subject, thus enabling a student to complete two half-units. The tuition fee will be five dollars whether the student takes one or two subjects.

High-school students who are interested in this opportunity to shorten their high-school attendance or to make up deficiencies are urged to communicate with Principal H. W. Nutt, Oread Training School, as early as possible in order that the subjects offered may accommodate as large numbers as possible.

THE SUMMER SESSION KANSAN.

The Summer Session Kansan is a triweekly college newspaper, edited by the students in journalism. It contains all official and student organization announcements, campus news and notes, editorial comments, etc.

RECOMMENDATION OF TEACHERS.

The University endeavors to assist its own graduates and other properly prepared candidates to secure positions as teachers, and at the same time to be of service to city schools, high schools, academies and colleges which may be in need of superintendents or instructors. To this end the Committee on Recommendations preserves a complete list and record of all teachers, whether graduates of the University or not, who have studied here long enough to give the University faculty a basis for judging their ability. The University authorities are thus prepared at any time to recommend persons who are well qualified for positions. In so doing, great care is exercised, the special qualifications of various teachers for the particular position in hand being fully considered.

Professor W. H. Johnson is chairman of this committee. All communications regarding teachers should be addressed to him. He is in residence throughout the Summer Session, and will meet all teachers who wish to enroll, as well as superintendents who are looking for teachers.

CORRESPONDENCE-STUDY.

One of the departments of the University Extension Division is the Department of Correspondence-Study. This department and the Summer Session have at least one aim or purpose in common; to furnish instruction in college and university subjects to those persons who for any reason are unable to attend the regular sessions of the University in residence. Combinations of correspondence-study and the residence work of the Summer Session are possible and recommended. Teachers especially, by carrying correspondence work through the winter months and

later attending the Summer Session, may accumulate credits toward a degree rapidly and effectively. At the same time the individual's earning power is preserved while he is learning.

ADMISSION.

The classes of the Summer Session are open to all who can satisfy the instructors that their preparation is sufficient to enable them to do the work properly; that is, a student may register in the Summer Session and attend its classes without meeting the requirements for admission which are in force during the regular session, and without paying the five-dollar matriculation fee which is required of all who enter a regular session for the first time. Record of credits will be kept on file but will not be applied toward any degree until the matriculation fee has been paid.

TIME OF BEGINNING WORK.

First Term, June 7 to July 18.

All classes meet on Thursday, June 7, at the hours scheduled in this Catalog. A full hour of work will be given in all departments on the opening day. All students should be in their classes on that day, whether they have registered or not. Regular class work will be done on both Friday and Saturday of that week, but on no other Saturday of the session. Students are permitted to register for the maximum amount of work as late as Monday, June 11, but are then seriously handicapped by the loss of three days' class work.

Those who enter later than June 11 must register for less work, because they will have to make good what they have lost in the early days of the session. And after June 11 any instructor may refuse to admit more members to his classes if the classes are uncomfortably full or if the work of the first days can not be made up satisfactorily.

Second Term, July 19 to August 15.

All classes meet on Thursday, July 19. Those who enter for the second term should have their work planned and their registration completed before that time.

REGISTRATION.

First Term, June 7 to July 18.

The days of registration are Monday, June 4, to Saturday, June 9, inclusive. Students should pay their fees at the Secretary's office and enroll at the Director's office, Room 119, Fraser Hall, as promptly as possible, preferably on the Monday, Tuesday, or Wednesday preceding the beginning of work. But late arrivals should not postpone attendance on classes for the sake of registering.

On Monday, June 11, instructors will receive from the office lists of the students enrolled in their classes. Students whose names do not appear on those lists will not be considered members of the classes until they have registered.

Second Term, July 19 to August 15.

The days of registration for the second term are July 17, 18, and 19. The procedure outlined for the first term should be followed for the second term, except that those who have been enrolled for the first term will have no fee to pay for the second term.

NATURE OF COURSES.

The courses offered in the Summer Session are for the most part courses which are offered in the regular sessions, or modifications of such courses. Many of the courses have been selected with a view to

meeting the wishes of teachers, and certain ones have been modified in some details for the same purpose. But such modifications are not so great as to make the courses unsuitable for students who do not intend to teach nor do they lower the grade of the work.

Regular students of the University must be on their guard against duplicating work. Some of the Summer Session courses, while not exactly equivalent to regular courses, are so nearly equivalent to them that credit will not be given for both. In such cases a warning is given in the statement of the course by the words, "nearly=." Students who have had the regular course may not take for credit the Summer Session course. Students who take the Summer Session course will be barred in the future from the regular course.

AMOUNT OF CREDIT.

The normal amount of credit to be obtained in the six-weeks session is five hours; the maximum is six hours. *Under no circumstances will registration for more than six hours credit be permitted in this session.* The amount of credit given for each course is indicated in the statement of that course.

The maximum amount of credit to be obtained in the four-weeks session is four hours. Students who avail themselves of both sessions may thus receive a maximum of ten hours credit for their ten weeks' work—just one-third of a regular year's work.

CREDIT TOWARD DEGREES.

Almost every course offered in the Summer Session gives credit toward one of the University degrees. The statement of each course indicates the amount of credit given for its completion, and the school or schools of the University in which it will be accepted for credit. The special sections of the catalog must be consulted for a complete statement of the degrees conferred by each school, and of the requirements for each degree.

GRADUATE WORK.

Graduates of the University of Kansas, or of other institutions of good rank, find in the Summer Session an opportunity to do graduate work which will lead to the master's degree. Thirty credit hours is the minimum requirement for this degree. A thesis is required as part of this work. *The selection of all courses and of a subject for a thesis must be sanctioned in advance by the Dean of the Graduate School and the head of the department in which the applicant elects to do his major work.* Therefore, students desiring graduate credit for summer work should register with the Dean of the Graduate School, as well as with the Director of the Summer Session.

Since ten hours of work may be completed in one summer of ten weeks, it is now possible to secure the master's degree in three summer sessions.

FEES AND EXPENSES.

The fee for Kansas students for the Summer Session is ten dollars, for nonresidents fifteen dollars, which covers admission to all courses except private lessons in music. For certain laboratory courses there will be, in addition, the cost of materials.

Lawrence is well provided with boarding houses and restaurants, and a sufficient number of these will continue in operation to supply all demands of the Summer Session. Good board, including room and service, may be had in private families at from \$5 to \$7 per week. The stewards of some of the existing student boarding clubs will remain on the ground and be prepared to carry on their organizations.

A list of rooms and boarding places is kept on file in the Registrar's office, and can be consulted at the time of registration. The number of students is so much less in summer than in the regular session that there is an abundance of rooms from which to choose.

DESCRIPTION OF COURSES.

The Summer Session courses offered by each department are numbered consecutively with Roman numerals. Arabic numerals refer to the courses as numbered in the General Catalog for 1916. For example, I (= 2) means that course I of this catalog is identical with course 2 of the General Catalog. I (nearly = 2) means that course I of this catalog is a modification (generally a condensation) of course 2 of the General Catalog.

College students who need freshman and sophomore credits, either to complete the required 60 hours of such work or to complete the requirements of 5 hours in each of the 6 groups, must note the Arabic numerals. Only the courses which are numbered from 1 to 49 will satisfy those requirements. Courses numbered 100 and above are strictly graduate courses.

All classes meet five days a week, Monday to Friday, inclusive, and also on Saturday, June 9.

ANATOMY.

(See *Medicine*.)

BACTERIOLOGY.

First Term, June 7 to July 18.

I (= 1).—GENERAL BACTERIOLOGY. Five hours credit in the College, 7:15 to 12. Sherwood.

II (= 61).—SPECIAL PROBLEMS IN BACTERIOLOGY. Two to six hours credit in the College or in the Graduate School. By appointment. Sherwood.

BOTANY.

First Term, June 7 to July 18.

I (= three-fifths of 2).—THE LIVING PLANT. Three hours credit in the College or School of Pharmacy, 7:30 to 9. Stevens.

II (nearly = 3).—PLANT PHYSIOLOGY. Three hours credit in the College, 7:30 to 9. Shull.

III (nearly = 60).—ELEMENTS OF AGRICULTURE. Three hours credit in the College, 10:30 to 12. Shull.

IV (= 61).—TREES AND SHRUBS. Three hours credit in the College or Graduate School, 9 to 10:30. Stevens.

V (= 102).—RESEARCH IN PLANT HISTOLOGY. Four or six hours credit in the Graduate School. Registration only after consultation. Stevens.

VI (= 103).—RESEARCH IN PLANT PHYSIOLOGY. Four or six hours credit in the Graduate School. Registration only after consultation. Shull.

Second Term, July 19 to August 15.

VII (nearly = 1).—GENERAL MORPHOLOGY OF PLANTS. Four hours credit in the College, 7:30 to 12. Wilson.

VIII (= 4).—PLANT HISTOLOGY. Two hours credit in the College, 7:30 to 9. Stevens.

IX.—THE ELEMENTS OF LANDSCAPE AND GARDEN DESIGN. Two hours credit in the College, 9 to 10:30. Stevens.

X (nearly = 55).—MORPHOLOGY OF THALLOPHYTES. Two hours credit in the College or Graduate School. By appointment. Wilson.

XI (nearly = 102).—RESEARCH IN PLANT HISTOLOGY. Four hours credit in the Graduate School. Registration only after consultation. Stevens.

CHEMISTRY.

First Term, June 7 to July 18.

Since the following courses involve laboratory work, the student will be obliged to procure a coupon book at the office of the registrar. Coupons will be removed from time to time to cover the expenses of the course. The apparatus needed will be loaned without expense, but students are required to pay for apparatus actually broken, destroyed, or used up. A deposit will also be required to cover this.

I (= 1).—ELEMENTARY CHEMISTRY. Five hours credit in the College or School of Pharmacy, or as an entrance unit, 7:30 to 12. Stratton.

II (= 2).—INORGANIC CHEMISTRY. Four or five hours credit. Five hours credit in the College, School of Medicine, School of Pharmacy, or chemical engineering course; four hours credit in the other engineering courses, where less laboratory work is done, 7:30 to 12. Cady.

III (= 3).—QUALITATIVE ANALYSIS. Five hours credit in the College, School of Pharmacy, School of Medicine, or chemical engineering course; four hours credit in the other engineering courses, 7:30 to 12. Faragher.

IV (= 54).—QUANTITATIVE ANALYSIS. Two, three or five hours credit in the College or School of Engineering, 7:30 to 12. Allen.

V (= 108).—GAS ANALYSIS. Two hours credit in the School of Engineering or in the Graduate School. By appointment. Allen.

VI (= 52E).—OIL ANALYSIS. Two hours credit in the School of Engineering or in the Graduate School. By appointment. Allen.

VII.—CHEMISTRY OF PHOTOGRAPHY. Two hours credit in the College. By appointment. Allen.

VIII (= 59A).—ELEMENTARY ORGANIC CHEMISTRY. Five hours credit in the College, School of Medicine, or School of Pharmacy, but not in the School of Engineering, 7:30 to 12. Prerequisite, ten hours chemistry. Dains.

IX (= 60).—ADVANCED ORGANIC CHEMISTRY, or (= 104) ORGANIC PREPARATIONS (Advanced). Five hours credit in the College or the Graduate School (60); five hours credit in the Graduate School (104), 7:30 to 12. Dains.

X (= 102).—ORGANIC CHEMISTRY (Research). Five hours credit in the Graduate School, 7:30 to 12. Dains.

XI (= 115).—ADVANCED TOPICS IN INORGANIC CHEMISTRY. Two hours credit in the Graduate School, 11 to 12. Faragher.

XII (= 116).—INORGANIC PREPARATIONS. Two or three hours credit. Faragher.

XIII.—RADIO CHEMISTRY. Two hours credit in the Graduate School. By appointment. Faragher.

XIV (= 64).—PHYSICAL CHEMISTRY I. Five hours credit in the College or in the Graduate School, 7:30 to 12. Cady.

XV (= 103).—PHYSICAL CHEMISTRY. Two to five hours credit in the Graduate School. A research course. By appointment. Cady.

Second Term, July 19 to August 15.

XVI (nearly = 54).—BEGINNING QUANTITATIVE ANALYSIS. Four hours credit in the College or School of Engineering. Bruckmiller.

XVII (= 56).—WATER ANALYSIS. Three hours credit in the College or Graduate School. Prerequisite, course 54. Bruckmiller.

XVIII—SANITARY AND APPLIED CHEMISTRY. Two hours credit in the College, 9 to 10:30. Bruckmiller.

XIX—INDUSTRIES OF THE STATE. Two hours credit in the College, 10:30 to 12. Bruckmiller.

DRAWING AND DESIGN.

First Term, June 7 to July 18.

I (= Education 95).—TEACHERS' COURSE IN FREE-HAND DRAWING AND DESIGN. Three hours credit in the School of Education, 7:30 to 10:30. Hekking.

II (= 1 in the College, or credit in the School of Fine Arts).—FREE-HAND DRAWING. Three hours credit in the College or School of Fine Arts, 9:30 to 12:30. Hekking.

ECONOMICS AND COMMERCE.

First Term, June 7 to July 18.

I (nearly = 1).—ELEMENTS OF ECONOMICS. Three hours credit in the College, 7:30 to 9. Duffus.

II (nearly = 81).—MARKETS AND MARKETING. Two hours credit in the College or in the Graduate School, 10 to 11. Duffus.

III (= 50).—MONEY AND CREDIT. Three hours credit in the College or in the Graduate School, 7:30 to 9. Boynton.

IV (= 53).—INVESTMENTS. Two hours credit in the College or in the Graduate School, 9 to 10. Boynton.

V (= 100).—SEMINAR. One to four hours credit in the Graduate School. Hour to be arranged. Boynton, Duffus.

Second Term, July 19 to August 15.

VI (nearly = 61).—PUBLIC FINANCE. Two hours credit in the College or Graduate School, 9 to 10:30. Woodbury.

VII (= 71).—LABOR PROBLEMS, THE STATE IN RELATION TO LABOR. Two hours credit in the College or Graduate School, 10:30 to 12. Woodbury.

VIII (nearly = 73).—ECONOMICS OF AGRICULTURE. Two hours credit in the College or in the Graduate School, 7:30 to 9. Putnam.

IX (= 57).—CORPORATION FINANCE. Two hours credit in the College or in the Graduate School, 9 to 10:30. Putnam.

X (= 100).—SEMINAR. One to four hours credit in the Graduate School. Hour to be arranged. Putnam, Woodbury.

EDUCATION.

First Term, June 7 to July 18.

I (= 51).—HISTORY OF MODERN EDUCATION. Three hours credit in the School of Education or the Graduate School, 7:30 to 9. Olin.

II (= 59).—EDUCATIONAL CLASSICS I. Two hours credit in the School of Education or the Graduate School, 9 to 10. Olin.

III (= 75).—PSYCHOLOGY OF HIGH-SCHOOL SUBJECTS. Three hours credit in the School of Education or in the Graduate School, 10:30 to 12. (This course satisfies the state and University requirements in educational psychology.) Carter.

IV (= 67).—SPECIAL PROBLEMS IN EDUCATIONAL PSYCHOLOGY. Two hours credit in the School of Education or the Graduate School, 9 to 10. Carter.

V (= 73).—CITY SCHOOL ADMINISTRATION. Two hours credit in the School of Education or the Graduate School, 8 to 9. Kent.

VI.—SCHOOL SURVEYS. Three hours credit in the School of Education or the Graduate School, 9 to 10:30. Kent.

VII (= 61).—HIGH-SCHOOL ADMINISTRATION. Three hours credit in the School of Education or in the Graduate School, 9 to 10:30. Johnson.

VIII (= 56).—VOCATIONAL EDUCATION AND GUIDANCE. Three hours credit in the School of Education or in the Graduate School, 7:30 to 9. Johnson.

IX (nearly = 71).—THE ABNORMAL CHILD. One or two hours credit in the School of Education or in the Graduate School, Saturday, 9:30 to 12 and 1:30 to 4. Schwegler.

X (= 104).—SEMINAR IN EDUCATIONAL ADMINISTRATION. Two to six hours credit in the Graduate School, 11 to 12. Kelly.

XI.—TEACHERS' COURSE IN NORMAL TRAINING. Three hours credit in the School of Education or the Graduate School, 9 to 10:30. Nutt.

XII (= 81).—TEACHERS' COURSE IN BIOLOGICAL SCIENCES. Three hours credit in the School of Education and in the Graduate School, 9 to 10:30. Eikenberry.

XIII (= 95).—TEACHERS' COURSE IN DRAWING AND DESIGN. (See Drawing and Design.)

XIV (= 86).—TEACHERS' COURSE IN ENGLISH. (See English.)

XV (= 85).—TEACHERS' COURSE IN GERMAN. (See German.)

XVI (= 83).—TEACHERS' COURSE IN HOME ECONOMICS. (See Home Economics.)

XVII (= 87).—TEACHERS' COURSE IN LATIN. (See Latin.)

XVIII (= 89).—TEACHERS' COURSE IN MATHEMATICS. (See Mathematics.)

XIX (= 97).—TEACHERS' COURSE IN PHYSICAL EDUCATION. (See Physical Education.)

Those who desire to take any of the following courses in senior teaching should see Mr. Nutt, principal of Oread Training School, before enrolling.

XX (= 81a).—SENIOR TEACHING IN BIOLOGICAL SCIENCE.

XXI (= 91a).—SENIOR TEACHING IN CIVICS.

XXII (= 96a).—SENIOR TEACHING IN ECONOMICS.

XXIII (= 86a).—SENIOR TEACHING IN ENGLISH.

XXIV (= 85a).—SENIOR TEACHING IN GERMAN.

XXV (= 83a).—SENIOR TEACHING IN HOME ECONOMICS.

XXVI (= 89a).—SENIOR TEACHING IN MATHEMATICS.

XVII (= 88a).—SENIOR TEACHING IN ROMANCE LANGUAGES.

Second Term, July 19 to August 15.

XXVIII (= 104).—SEMINAR IN EDUCATIONAL ADMINISTRATION. Two to four hours credit in the Graduate School, 10:30 to 12. Buckner.

XXIX (= 52).—EDUCATIONAL MEASUREMENTS. Two hours credit in the School of Education or the Graduate School, 7:30 to 9. Buckner.

XXX (nearly = 72).—PRINCIPLES OF SUPERVISION. Two hours credit in the School of Education or the Graduate School, 9 to 10:30. Nutt.

XXXI.—SPECIAL PROBLEMS IN HIGH SCHOOL TEACHING. Two hours credit in the School of Education or in the Graduate School, 9 to 10:30. Robbins.

XXXII (= 53).—SOCIAL EDUCATION. Two hours credit in the School of Education or in the Graduate School, 10:30 to 12. Robbins.

ENGLISH.

First Term, June 7 to July 18.

I (nearly = 88).—THE ENGLISH NOVEL. Two hours credit in the College or the Graduate School, 9 to 10. Dunlap.

II (= 78).—SHAKSPERE. Three hours credit in the College or the Graduate School, 10:30 to 12. Dunlap.

III (= 71).—AMERICAN LITERATURE. Three hours credit in the College or the Graduate School, 7:30 to 9. Hopkins.

IV (nearly = 60).—ELEMENTARY OLD ENGLISH. Two hours credit in the College or the Graduate School, 9 to 10. Hopkins.

V (= 50).—NARRATION AND DESCRIPTION. Three hours credit in the College or the Graduate School, 7:30 to 9. O'Leary.

VI (= 1).—RHETORIC AND COMPOSITION. Three hours credit in the College, 9 to 10:30. A fundamental course. O'Leary and Winston.

VII (= 11).—ENGLISH LITERATURE. Three hours credit in the College, 7:30 to 9. Winston.

VIII (= Education 86).—TEACHERS' COURSE IN ENGLISH. Three hours credit in the School of Education or the Graduate School. 9 to 10:30. Battey.

Second Term, July 19 to August 15.

IX (= 10).—ENGLISH LITERATURE. Two hours credit, 7:30 to 9. Burnham.

X (= 68).—MODERN ENGLISH GRAMMAR. Two hours credit, 9 to 10:30. Burnham.

XI (= 12*b*).—HISTORY OF ENGLISH LITERATURE. Two hours credit in the College, 7:30 to 9. Gardner.

XII (= 2).—RHETORIC AND COMPOSITION. Two hours credit in the College, 9 to 10:30. A continuation of Course VI. Gardner.

ANNOUNCEMENTS.

For the benefit of students who are candidates for the master's degree, the Department of English announces the following courses as probable, so that intending students may plan their work ahead:

For 1918: Nineteenth Century Prose; Shakspere; Methods of Teaching English; American Literature; English Drama; English Essay; Middle English.

For 1919: Nineteenth Century Poetry; Shakspere; Methods of Teaching English; American Literature; Literary Criticism; Modern Drama; Modern English Lyric; Old English.

ENTOMOLOGY.

First Term, June 7 to July 18.

The purpose of the Department in offering courses in the Summer Session is to enable students to take advantage of the opportunity for biologic study of insect life not possible at other times of the year. The Department, therefore, does not repeat in the summer the regular winter courses, but offers courses devoted largely to experimental study of living forms. The work is conducted, in part, as an outdoor study.

I (= 1).—INTRODUCTORY ENTOMOLOGY. Three to six hours credit in the College, 8 to 12. Claassen.

II (= 2 and 51).—MORPHOLOGY OF INSECTS. Three to six hours credit in the College or three hours credit in the Graduate School, 8:30 to 11:30. Lawson.

III.—FIELD ENTOMOLOGY. Three to six hours credit in the College. This course is of equal rank with courses 1 and 3 of the College.

Lawson.

IV.—BIOLOGICAL SURVEY. Six hours credit in the College or in the Graduate School. Claassen.

V.—ORCHARD AND FOREST INSECT LIFE. Six hours credit in the College or Graduate School. Claassen.

VI.—RESEARCH. The privileges of the laboratory and library will again be afforded graduate students to carry on special lines of investigation. Claassen, Lawson.

Second Term, July 19 to August 15.

VII.—GENERAL ECONOMIC ENTOMOLOGY. Four hours credit in the College, 8 to 12. Hungerford.

VIII.—BIOLOGICAL SURVEY (*continued*). Four hours credit in the College or in the Graduate School. Hungerford.

IX.—ORCHARD AND FOREST INSECT LIFE (*continued*). Four hours credit in the College or in the Graduate School. Hungerford.

GEOLOGY.

First Term, June 7 to July 18.

I (= three-fifths of 1).—ELEMENTARY GEOLOGY. Three hours credit in the College, 7:30 to 9. Haworth.

II (= 56).—PHYSIOGRAPHY. Three hours credit in the College, 9 to 10:30. Haworth.

III (= 62 and 111).—SUMMER FIELD WORK. Six hours credit in the College or in the Graduate School. Prerequisite, geology I. Haynes.

GERMAN.

First Term, June 7 to July 18.

Ia (= three-fifths of 1).—BEGINNING GERMAN. Three hours credit in the College, School of Fine Arts, or School of Engineering, 7:30 to 9. Combined with course Ib it may be used as an entrance unit. Engel.

II (= 5).—WALLENSTEIN. Three hours credit in the College, 10:30 to 12. Open to students who have had three years of German in high school or fifteen hours in college. Palmblad.

III (= 11 and 13).—WRITTEN AND ORAL COMPOSITION. Three hours credit in the College, 9 to 10:30. Open to students who have had at least twenty hours of college German or its equivalent. Palmblad.

IV (= Education 85).—TEACHERS' COURSE IN GERMAN. Three hours credit in the School of Education, 10:30 to 12. Engel.

V.—GOETHE. Three hours credit in the College or in the Graduate School, 7:30 to 9. Thurnau.

VI (= 52).—GERMAN PROSE FICTION. Three hours credit in the College or in the Graduate School, 9 to 10:30. Thurnau.

Second Term, July 19 to August 15.

VII (= two-fifths of 1).—BEGINNING GERMAN, completed. Two hours credit, 9 to 10:30. Carruth's Reader. Kruse.

VIII.—MODERN GERMAN DRAMA. Two hours credit in the College or in the Graduate School, 7:30 to 9. Kruse.

GREEK.

I.—GREEK POETRY IN ENGLISH. Two hours credit in the College or the Graduate School, 9 to 10. Brandt.

HISTORY AND POLITICAL SCIENCE.

First Term, June 7 to July 18.

I (= three-fifths of 3).—LATER ENGLAND. Three hours credit in the College, 7:30 to 9. Crawford.

II (= 57).—LATER ENGLISH INSTITUTIONS. Two hours credit in the College or the Graduate School, 9 to 10. Crawford.

III.—HISTORY OF LATIN AMERICA. Three hours credit in the College or Graduate School, 7:30 to 9. Schurz.

IV.—DIPLOMATIC RELATIONS BETWEEN THE UNITED STATES AND LATIN AMERICA. Two hours credit in the College or Graduate School, 10 to 11. Schurz.

V (= three-fifths of 10).—AMERICAN GOVERNMENT. Three hours credit in the College, 9 to 10:30. Moore.

VI (= two-thirds of 83).—INTERNATIONAL LAW. Two hours credit in the College or Graduate School, 11 to 12. Moore.

Second Term, July 19 to August 15.

VII.—THE AGE OF DESPOTS, 1589-1789. Two hours credit in the College, 9 to 10:30. Melvin.

VIII (= 61).—NAPOLEONIC EUROPE, 1795-1815. Two hours credit in the College or in the Graduate School, 7:30 to 9. Melvin.

IX.—DEVELOPMENT OF THE PACIFIC SLOPE. Two hours credit in the College and Graduate School, 10:30 to 12. Goodwin.

X.—HISTORY IN THE HIGH SCHOOL. (= *Ed* 91). Two hours credit in the School of Education and Graduate School, 9 to 10:30. Goodwin.

HOME ECONOMICS.

First Term, June 7 to July 18.

I (= 0).—PLAIN SEWING AND GARMENT MAKING. No credit. Three hours laboratory work daily, 7:30 to 9, and one and one-half hours daily by appointment. It is a prerequisite to course 72. Gwinn.

II (= 1).—HOME ARCHITECTURE AND SANITATION. Two hours credit in the College; 11 to 12. Gwinn.

III (= 60).—FOOD AND NUTRITION. Three hours credit in the College, 7:30 to 9. Open to all students. Hazen.

IV (= 65).—PUBLIC ASPECTS OF THE HOUSEHOLD. Three hours credit in the College, 9 to 10:30. Hazen.

V (= 72*b*).—CLOTHING MANUFACTURE. Two hours credit in the College, 7:30 to 10:30. Gwinn.

VI (= 52).—SPECIAL PROBLEMS IN FOOD PREPARATION. Three hours credit in the College or the Graduate School, 9:30 to 12. Sprague.

VII (= Education 83).—TEACHERS' COURSE IN HOME ECONOMICS. Three hours credit in the School of Education or in the Graduate School, 7:30 to 9. Sprague.

Second Term, July 19 to August 15.

VIII (nearly = 71).—TEXTILES. Two hours credit in the College, 7:30 to 9:30. Hazen.

IX (nearly = 83).—ELEMENTARY HOME ADMINISTRATION. Two hours credit in the College, 10:30 to 12. Hazen.

JOURNALISM.

First Term, June 7 to July 18.

I (= 1).—NEWSPAPER WRITING. Three hours credit in the College, 9 to 10:30. Flint.

II (= 53).—INTERPRETATION OF THE NEWS. Two hours credit in the College or in the Graduate School, 8 to 9. Flint.

NOTE.—For the benefit of high-school English teachers who have to deal with the problems of the high-school paper, weekly discussion will be held on Friday covering the methods of developing and utilizing the newspaper in the school—its value as an outlet for student production and as an interpreter of the school to the public.

LATIN.

First Term, June 7 to July 18.

I (= Education 87).—TEACHERS' COURSE IN LATIN. Two hours credit in the School of Education or, by arrangement, in the Graduate School. Three hours credit in the School of Education for a combination of this course with course II; 10 to 11. Walker.

II.—PREPARATORY LATIN COMPOSITION. No credit, except when taken as part of the three hours for course I. Walker.

III.—CICERO'S POLITICAL ORATIONS. Two hours credit in the College or the Graduate School, 8 to 9. Brandt.

IV.—THE SYNTAX OF THE LATIN VERB. Two hours credit in the College or in the Graduate School, 11 to 12. Walker.

V. (nearly = 102).—AN INTRODUCTION TO THE STUDY OF LATIN INSCRIPTIONS. Two hours credit in the Graduate School, 10 to 11. Brandt.

VI (= part of 106).—INVESTIGATION IN LATIN SYNTAX. Two or more hours credit in the Graduate School. Walker.

Second term, July 19 to August 15.

VII (nearly = 7).—HORACE'S ODES. Two hours credit in the College, 9 to 10:30. Cressman.

VIII (= 13 or 50).—LATIN COMPOSITION. Two hours credit; as 13, in the College; as 50, in the College or the Graduate School, 10:30 to 12. Cressman.

LAW.

First term, June 7 to July 18.

The courses in law in the Summer Session are designed to assist those who do not have the requisite credits in law to entitle them to enroll regularly in either the Middle or Senior classes of the School of Law, or who desire to shorten the actual time required to complete the three-year course of study. A course has been arranged which will enable a person who enrolls in the Summer Session to graduate after attending three Summer and two regular sessions of the University, providing he has previously completed the preparatory work required for entrance to the Law School.

Note that those who wish to take advantage of this arrangement should begin their University residence in the summer, not in the fall.

Any two of the following courses may be taken by the student upon satisfying the instructor of his preparation to undertake the work. It is intended, however, that those who wish to complete the course in the School of Law in three summer and two regular sessions shall study criminal law and torts in the first Summer Session, agency and insurance in the second Summer Session, and partnership and wills in the third

Summer Session. During the regular sessions the student will pursue the course of study in the order stated in the General Catalog of the University for students enrolled in the Summer Session course.

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|---|----------|
| I.—CRIMINAL LAW. 9 to 10:30. | Burdick. |
| II.—TORTS. 7:30 to 9. | Green. |
| III.—AGENCY. 9 to 10:30. | Green. |
| IV.—INSURANCE. 7:30 to 9. Open only to students who have had Contracts. | Humble. |
| V.—WILLS. 7:30 to 9. | Burdick. |
| VI.—PARTNERSHIP. 9 to 10:30. | Humble. |

MATHEMATICS.

First Term, June 7 to July 18.

- I (= 1).—SOLID GEOMETRY. Two hours credit in the College, required for entrance to the School of Engineering, 10 to 11. Jordan.
- II (= 3).—PLANE TRIGONOMETRY. Two hours credit in the College, 8 to 9. Mitchell.
- III (= 4).—ANALYTICAL GEOMETRY I. Two hours credit in the College, 9 to 10. Stouffer.
- IV (= 5).—CALCULUS I. Three hours credit in the College, 7:30 to 9. Stouffer.
- V (= 4e).—MATHEMATICAL ANALYSIS. Five hours credit in the School of Engineering, 7:30 to 10. Jordan.
- VI (= 51).—DIFFERENTIAL EQUATIONS. Two or three hours credit in the College or Graduate School, 10 to 11. Stouffer.
- VII (= 55).—HIGHER ALGEBRA I. Two or three hours credit in the College or Graduate School, 9 to 10. Mitchell.
- VIII (nearly = Ed. 89).—TEACHERS' COURSE IN MATHEMATICS. Three hours credit in the School of Education or in the Graduate School, 10:30 to 12. Mitchell.

Second Term, July 19 to August 15.

- IX (= 2b).—COLLEGE ALGEBRA. Two hours credit in the College, 7:30 to 9. Van der Vries.
- X. (nearly = 10).—MATHEMATICAL THEORY OF INVESTMENTS. Two hours credit in the College, 9 to 10:30. Van der Vries.

MEDICINE.

First Term, June 7 to July 18.

Courses I, II, III and IV are required of medical students.

- I (= 1).—DISSECTION OF THE ARM AND THORACIC WALL. Three hours credit. Sundwall.
- II (= 2).—DISSECTION OF THE LEG, PERINEUM AND ABDOMINAL WALL. Three hours credit. Sundwall.
- III (= 3).—DISINFECTION OF THE THORACIC AND ABDOMINAL VISCERA. Three hours credit. Sundwall.
- IV (= 4).—DISSECTION OF THE HEAD AND NECK. Three hours credit. Sundwall.

For the above four courses: Lectures, 8 a. m.; laboratory from 9 a. m., throughout the day. Laboratory fees, \$5 per course.

- V (= 6).—TOPOGRAPHICAL ANATOMY. Three hours credit in the School of Medicine. Lectures daily, 9 a. m.; laboratory daily, from 10 a. m. throughout the day. Laboratory fees, \$5. Sundwall.

VI (= 11).—ADVANCED WORK IN ANATOMY. Credits, hours and fees to be arranged. Sundwall.

Courses 1, 2, 3, 4 are designed for medical students.

Course 6 is designed for those who wish to make a complete review of anatomy.

Course 11 is particularly designed for those who wish to specialize in some branch of medicine.

VIIa.—HISTOLOGY. Three hours credit in the College or in the School of Medicine, 9:30 to 11 a. m., with 60 additional hours of laboratory work to be arranged by consultation with the instructor. Prerequisite, ten hours of biology. Coghill.

VIIb.—SPLANCHNOLOGY. Two hours credit in the College or in the School of Medicine, 9:30 to 11:30. Prerequisite, course VIIa.

Courses VIIa and VIIb are the equivalent of Anatomy VII (Histology and Splanchnology). Coghill.

VIII (= 8).—EMBRYOLOGY. Two hours credit in the School of Medicine, 11 to 12, with 36 additional hours of laboratory work to be arranged by conference with the instructor. Prerequisite, course 7. Coghill and assistants.

IX (= 9).—INTRODUCTORY NEUROLOGY. Three hours credit in the College, 7:30 to 9:30.

This course is not accredited in the Medical School, but with certain modifications, arranged by the instructors for individual cases, it may be substituted for the regular course in neurology in the Medical School. Coghill.

The following courses, to be conducted at Rosedale, will be offered if an enrollment of at least six students giving full time to study obtains at the opening of the summer session:

X.—GENERAL PATHOLOGY. (At Rosedale.) Five hours credit. Daily, 8 to 12 a. m. Major.

XI.—SPECIAL PATHOLOGY. (At Rosedale.) Two hours credit.

Major.

XII.—POST-MORTEM PATHOLOGY. (At Rosedale.) Three hours credit. Assigned work. Major.

XIII.—ADVANCED BACTERIOLOGY AND PATHOLOGY. (At Rosedale.) Open to advanced students who have had sufficient preparation. Hours to be arranged. Major.

MUSIC.

First Term, June 7 to July 18.

The Summer Session work in music will be under the direction of Associate Dean Preyer. The Department offers courses in piano under Associate Dean Preyer, Assistant Professor Greissinger, and Assistant Professor Sweeney; in voice, under Professor Downing and Mrs. Olcott; in organ, under Professor Skilton; in public-school music, under Professor Downing; in theory, under Professor Skilton and Miss Sweeney; and in history of music, under Professor Skilton.

The following theoretical subjects may be taken without an additional fee:

PUBLIC-SCHOOL MUSIC.

I (= 1).—TEACHING OF MUSIC IN ELEMENTARY SCHOOLS. Two hours credit.

GENERAL PEDAGOGICAL PROBLEMS.

Downing.

II (= 3).—TEACHING OF MUSIC IN HIGH SCHOOLS. Two hours credit.

GENERAL PEDAGOGICAL PROBLEMS.

Downing.

SIGHT SINGING AND EAR TRAINING.

I (= 1).—ELEMENTARY SIGHT SINGING AND EAR TRAINING. One-half hour credit. Downning.

II (= 2).—ADVANCED SIGHT SINGING AND EAR TRAINING. One-half hour credit. Downning.

MUSIC THEORY.

I (= 52).—HARMONY. Two hours credit in the College or in the School of Fine Arts. Sweeney.

II (= 53).—HARMONY. Two hours credit in the College or in the School of Fine Arts. Skilton.

MUSIC APPRECIATION.

I (= 50).—APPRECIATION OF MUSIC. Two hours credit in the College or in the School of Fine Arts. Skilton.

PIANO, VOICE, ORGAN.

Courses in piano, voice and organ, offered by the Department of Music, and the special fees charged, are as follows: Kansas students taking two lessons a week and paying not less than \$12 in special fees may take any of the theoretical music subjects or any other regular courses in the Summer Session without additional cost. Nonresident students taking two lessons a week and paying not less than \$18 in special fees may take any of the theoretical music subjects or any other regular courses in the Summer Session without additional cost.

PIANO. One hour credit for two lessons and eight hours practice each week. (Additional credit may be arranged for by consulting Associate Dean Preyer.)

VOICE. One hour credit for two lessons and eight hours practice each week.

ORGAN. One hour credit for two lessons and eight hours practice each week. (Additional credit may be arranged for by consulting Professor Skilton.)

Special students in piano, voice or organ may be admitted to the Summer Session by obtaining the permission of the Dean of the School of Fine Arts, and by paying the special fees stated below.

FEES FOR PRIVATE LESSONS FOR THE SIX-WEEKS TERM.

Private lessons in piano with Associate Dean Preyer:

One half-hour lesson a week.....\$12.00

Two half-hour lessons a week..... 24.00

Private lessons in organ with Professor Skilton:

One half-hour lesson a week.....\$12.00

Two half-hour lessons a week..... 24.00

Private lessons in voice with Professor Downning:

One half-hour lesson a week.....\$12.00

Two half-hour lessons a week..... 24.00

Private lessons in piano with Miss Greissinger or Miss Sweeney:

One-half hour lesson a week..... \$6.00

Two half-hour lessons a week..... 12.00

Private lessons in voice with Mrs. Olcott:

One-half hour lesson a week..... \$6.00

Two half-hour lessons a week..... 12.00

Organ practice at local churches, \$2 to \$3 a month for one hour daily.

Pianos may be rented at private houses or at the music dealers.

RECITALS.

The faculty of the School of Fine Arts will give a recital each week of the first-term session. The students in music will give fortnightly recitals.

"Community Sings," conducted by Dean Butler and Professor Downing, will be features of the first-term session.

PHILOSOPHY AND PSYCHOLOGY.

First Term, June 7 to July 18.

I (= 1a).—GENERAL PSYCHOLOGY. Three hours credit in the College, 7:30 to 9. Hunter.

II (= 1b).—GENERAL PSYCHOLOGY LABORATORY. Two hours credit in the College, 9 to 11. Hunter.

III (= 68).—ADVANCED PSYCHOLOGY. Two to five hours credit in the College or in the Graduate School. By appointment. Hunter.

Second Term, July 19 to August 15.

IV (= 4).—INTRODUCTION TO PHILOSOPHY. Two hours credit in the College, 9 to 10:30. Templin.

V (= 81).—PRACTICAL ETHICS. Two hours credit in the College or in the Graduate School, 10:30 to 12. Templin.

PHYSICAL EDUCATION.

First Term, June 7 to July 18.

I.—PRINCIPLES OF COACHING—TRACK ATHLETICS. No credit. 2:30 to 3:30. Hamilton.

II.—PRINCIPLES OF COACHING—BASKETBALL. No credit. 3:30 to 4:30. Hamilton.

III (= 57).—PRINCIPLES OF RECREATIVE SPORTS AND GAMES FOR WOMEN. Two hours credit in the College, 11 to 12. Pratt.

IV (= Ed. 97).—TEACHERS' COURSE IN PHYSICAL EDUCATION. Two hours credit, in the School of Education, 1 to 2. Pratt.

V.—SWIMMING. (Women.) Class instruction, 2:30 to 4:30 daily. A fee of one dollar will be charged.

VI.—FOLK DANCING.

A.—For beginners (open to any student in the Summer School). Pratt.

B.—For advanced students. Pratt.

VII.—DAILY RECREATION HOUR. 7 P. M.

PHYSICS.

First Term, June 7 to July 18.

I (= 5a).—GENERAL PHYSICS I. Mechanics, sound and light. Three hours credit in the College or the Engineering School. Offered in alternate years. (Not offered in 1917.)

II (= 6a).—GENERAL PHYSICS II. Heat and Electricity. Three hours credit in the College or the Engineering School, 7:30 to 9. Offered in alternate years. Kester.

III (= 5b).—GENERAL PHYSICS LABORATORY I. Mechanics, sound, and light. Two hours credit in the College or the Engineering School. 9 to 11. Kester.

IV (= 6b).—GENERAL PHYSICS LABORATORY II. Heat and electricity. Two hours credit in the College or the Engineering School. 9 to 11. Kester.

V (= 58).—PRINCIPLES OF ELECTRIC WAVE TELEGRAPHY. Three hours credit in the College, the Engineering School or the Graduate School. 7:30 to 9. Offered only if six or more students enroll for the course. Whittemore.

VI (= 59).—ELECTRIC WAVE TELEGRAPHY LABORATORY. Two to four hours credit in the College, the Engineering School or the Graduate School. Time by appointment. Whittemore.

VII (= 56).—ELECTRICAL MEASUREMENTS. Two to four hours credit in the College, the Engineering School, or the Graduate School. Hours by appointment. Whittemore.

VIII (= 107).—RESEARCH AND THESIS. Three to six hours credit in the Graduate School. By appointment. Kester, Whittemore.

PHYSIOLOGY.

First Term, June 7 to July 18.

I (= 1).—ELEMENTARY PHYSIOLOGY. Five hours credit in the College, 7:30 to 12. Stoland.

II (= 60).—ADVANCED PHYSIOLOGY. Three hours credit in the College. By appointment. Stoland.

PUBLIC SPEAKING.

First Term, June 7 to July 18.

I (= 1).—ORAL INTERPRETATION. Two hours credit in the College, 8 to 9. MacMurray.

II (= 50).—EXTEMPORE SPEAKING. Two hours credit in the College, 9 to 10. MacMurray.

III (= 60).—DRAMATIC ART I. Two hours credit in the College, 10 to 11. MacMurray.

ROMANCE LANGUAGES.

First Term, June 7 to July 18.

Ia (= three-fifths of 1; or, with additional work, of 51).—ELEMENTARY FRENCH. Three hours credit in the College, School of Engineering, School of Fine Arts; or as an entrance unit if completed by Ib of the second term, 9 to 10:30. Galloo.

Ia (= three-fifths of 2; or, with additional work, of 52; or, with more difficult reading, of 3).—FRENCH READINGS. Three hours credit in the College, School of Engineering, School of Fine Arts; or as an entrance unit if completed by Iib, 9 to 10:30. NeuenSchwander.

III (= 61).—THE FRENCH DRAMA. Two or three hours credit in the College or in the Graduate School, 11 to 12, or 10:30 to 12. Galloo.

IV (= three-fifths of 21; or, with additional work, of 71).—ELEMENTARY SPANISH. Three hours credit in the College, School of Engineering, School of Fine Arts; or as an entrance unit if completed by Ib of the second term. 9 to 10:30. Gutiérrez.

V (= three-fifths of 22; or, with additional work, of 72).—SPANISH GRAMMAR AND READINGS. Three hours credit in the College, School of Engineering, School of Fine Arts; or as an entrance unit if completed by Iib, 10:30 to 12. NeuenSchwander.

VI (= 23 or one-third of 27).—MODERN WRITERS AND ORAL SPANISH COMPOSITION. One or three hours credit; three hours credit, 7:30 to 9, for students electing 23; and one hour credit, 8 to 9, for students electing 27. Gutiérrez.

Second Term, July 19 to August 15.

VII (= two-fifths of 1; or, with additional work, of 51).—ELEMENTARY FRENCH, *completed*. Two hours credit in the College, School of

Engineering, or School of Fine Arts, thus making with Ia a five-hour credit in French 1 or 51, or be used as an entrance unit, 9 to 10:30. Saby.

VIII (= two-fifths of 21; or, with additional work, of 71).—ELEMENTARY SPANISH, *completed*. Two hours credit in the College, School of Engineering, or School of Fine Arts, 10:30 to 12. Saby.

SOCIOLOGY.

First Term, June 7 to July 18.

I (= 50).—ELEMENTS OF SOCIOLOGY. Two hours credit in the College or Graduate School, 8 to 9. Blackmar.

II (= 59).—ETHNOLOGY AND RACE PROBLEMS. Two hours credit in the College or Graduate School, 9 to 10. Blackmar.

III (nearly = 55).—PSYCHOLOGICAL SOCIOLOGY. Three hours credit in the College or Graduate School. Helleberg.

IV (= 56).—THE FAMILY. Two hours credit in the College or in the Graduate School. Helleberg.

V.—SEMINAR OF SOCIOLOGY. Two to four hours credit in the Graduate School. By appointment. Blackmar, Helleberg.

Second Term, July 19 to August 15.

V (nearly = 52).—SOCIAL PATHOLOGY. Two hours credit in the College or Graduate School. Bodenhafer.

VI (= 53).—REMEDIAL AND CORRECTIVE AGENCIES. Two hours credit in the College or Graduate School. Bodenhafer.

VII (= 64).—MUNICIPAL SOCIOLOGY. Two hours credit in the College or Graduate School. Elmer.

VIII (= 63).—SOCIAL SURVEYS. Two hours credit in the College or Graduate School. Elmer.

IX.—SEMINAR OF SOCIAL INVESTIGATION. Two to four hours credit in the Graduate School. By appointment. Elmer, Bodenhafer.

ZOOLOGY.

First Term, June 7 to July 18.

I (= 1).—ELEMENTARY ZOÖLOGY. Five hours credit in the College, 8 to 12. Fee, \$2. Baumgartner.

II (= 3).—COMPARATIVE ANATOMY. Five hours credit in the College, 8 to 12. Prerequisite, course I or its equivalent. Fee, \$2.50. Baumgartner.

III.—RESEARCH. By appointment. Baumgartner.

IV.—BIOLOGICAL SURVEY. Two or six hours credit in the College or Graduate School. By appointment. Allen.

Second Term, July 19 to August 15.

V (= 51).—ORNITHOLOGY. Two hours credit in the College or the Graduate School, 7:30 to 9, and field work by appointment. Fee, \$1. Douthitt.

VI (= 60).—ANIMAL BIOLOGY. Two hours credit in the College, 10:30 to 12. Douthitt.

VII (= 64).—HEREDITY IN RELATION TO EUGENICS. Two hours credit in the College or Graduate School. Robertson.

VIII (= 72b).—ANIMAL BREEDING. Two hours credit in the College, 7:30 to 9. Prerequisite, course 1 or equivalent. Robertson.

IX.—RESEARCH. By appointment. Robertson, Douthitt.

SECTION XI.
University Extension Division.

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THE FACULTY.

FRANK STRONG, Ph. D., Chancellor of the University.

FREDERICK R. HAMILTON, Ph. B., Director of University Extension Division.

HAROLD G. INGHAM, A. B., Secretary of Correspondence-Study Department.

EDGAR H. S. BAILEY, Ph. D., Professor of Chemistry and Metallurgy.

ALEXANDER M. WILCOX, Ph. D., Professor of Greek Language and Literature.

LUCIUS E. SAYRE, Ph. M., Professor of Pharmacy.

FRANK W. BLACKMAR, Ph. D., Professor of Sociology.

CHARLES G. DUNLAP, Litt. D., Professor of English Literature.

EDWIN M. HOPKINS, Ph. D., Professor of Rhetoric and English Language.

FRANK H. HODDER, Ph. M., Professor of American History and Political Science.

ERASMUS HAWORTH, Ph. D., Professor of Geology and Mineralogy.

ARTHUR T. WALKER, Ph. D., Professor of Latin Language and Literature.

WILLIAM C. STEVENS, M. S., Professor of Botany.

ARVIN S. OLIN, A. M., LL. D., Professor of Education.

EUGENIE GALLOO, A. M., Professor of Romance Languages and Literatures.

IDA H. HYDE, Ph. D., Professor of Physiology.

JAMES NAISMITH, M. D., Professor of Physical Education.

SAMUEL J. HUNTER, A. M., Professor of Entomology.

PERLEY F. WALKER, M. M. E., Professor of Mechanical Engineering.

L. D. HAVENHILL, Ph. M., Professor of Pharmacy.

FREDERICK E. KESTER, Ph. D., Professor of Physics.

GEORGE C. SHAAD, B. S., E. E., Professor of Electrical Engineering.

SAMUEL J. CRUMBINE, M. D., Professor of Preventative Medicine.

HERBERT A. RICE, C. E., Professor of Civil Engineering.

BENNET M. ALLEN, Ph. D., Professor of Zoölogy.

EDMUND H. HOLLANDS, Ph. D., Professor of Philosophy.

GOLDWIN GOLDSMITH, Ph. B., Professor of Architecture.

CLEMENT C. WILLIAMS, B. S., C. E., Professor of Railway Engineering.

ELMER F. ENGEL, A. M., Professor of German.

JOHN N. VAN DER VRIES, Ph. D., Professor of Mathematics.

ARTHUR MACMURRAY, A. B., M. O., Professor of Public Speaking.

ELIZABETH C. SPRAGUE, Professor of Home Economics.

RAYMOND A. SCHWEGLER, A. M., Professor of Education.

ARTHUR J. BOYNTON, A. M., Professor of Economics.

ARTHUR C. TERRILL, E. M., A. M., Professor of Mining and Ore Dressing.

FREDERICK J. KELLY, Ph. D., Professor of Education.

LEON N. FLINT, A. B., Professor of Journalism.

- FREDERICK H. SIBLEY, M. E., Professor of Mechanical Engineering.
 MILES W. STERLING, A. M., Associate Professor of Greek.
 HANNAH OLIVER, A. M., Associate Professor of Latin.
 SELDEN L. WHITCOMB, A. M., Associate Professor of English Literature.
 MARTIN E. RICE, M. S., Associate Professor of Physics.
 CLARENCE A. DYKSTRA, A. B., Associate Professor of History.
 ALBERTA L. CORBIN, Ph. D., Associate Professor of German.
 GEORGE J. HOOD, B. S., Associate Professor of Mechanical Drawing.
 WILLIAM J. BAUMGARTNER, A. M., Associate Professor of Zoölogy.
 HENRY O. KRUSE, A. M., Associate Professor of German.
 CLARENCE C. CRAWFORD, Ph. D., Associate Professor of European History.
 VICTOR E. HELLEBERG, LL. B., Associate Professor of Sociology.
 CHARLES A. HASKINS, B. S., Associate Professor of Sanitary Engineering.
 MARGARET LYNN,* A. M., Associate Professor of English Literature.
 ELISE NEUEN SCHWANDER, Ph. D., Associate Professor of Romance Languages.
 HENRY C. ALLEN, A. M., Associate Professor of Chemistry.
 WILLIAM W. DAVIS, Ph. D., Associate Professor of American History and Political Science.
 ALFRED H. SLUSS, B. S., Associate Professor of Mechanical Engineering.
 WILLIAM J. V. DEACON, Associate Professor of Preventative Medicine.
 GEORGE E. PUTNAM, B. Litt., Associate Professor of Economics.
 HERBERT W. NUTT, Ph. B., Associate Professor of Education.
 DOROTHY CHILDS, M. D., Associate Professor of Physical Education.
 CHARLES M. STERLING, A. B., Assistant Professor of Pharmacognosy.
 EDWIN F. STIMPSON, B. S., Assistant Professor of Physics.
 CHARLES COCHRAN, Assistant Professor of Mechanical Drawing.
 CLIFFORD C. YOUNG, A. B., Assistant Professor of Chemistry, and Director of State Water Survey.
 FREDERICK A. G. COWPER, A. M., Assistant Professor of Romance Languages.
 HERBERT E. JORDAN, Ph. D., Assistant Professor of Mathematics.
 WILLIAM R. B. ROBERTSON, Ph. D., Assistant Professor of Zoölogy.
 HERBERT B. HUNGERFORD,* A. M., Assistant Professor of Entomology.
 FREDERICK W. BRUCKMILLER, M. S., Assistant Professor of Chemistry.
 EDMUND D. CRESSMAN, Ph. D., Assistant Professor of Latin.
 CHARLES H. TALBOT, A. B., Head of the Municipal Reference Bureau.
 JOHN D. GARVER, B. S., Assistant Professor of Mechanical Engineering.
 MARK SKIDMORE, A. M., Assistant Professor of Romance Languages.
 RALPH E. CARTER, A. M., Assistant Professor of Education.
 FRANK L. BROWN, B. S., Assistant Professor of Mechanics.
 HERMAN DOUTHITT, A. M., Assistant Professor of Zoölogy.
 CHESTER A. BUCKNER,* A. M., Assistant Professor of Education.
 HARRY A. ROBERTS, B. S., Assistant Professor of Civil Engineering.
 ELLIS B. STOFFER, Ph. D., Assistant Professor of Mathematics.
 WILLIAM M. DUFFUS, A. M., Assistant Professor of Economics.
 GRACE M. CHARLES, Ph. D., Assistant Professor of Botany.
 JACOB O. JONES, Ph. B., Assistant Professor of Hydraulics.

* Absent on leave, 1916-'17.

JOSEPHINE M. BURNHAM, Ph. D., Assistant Professor of English.
 JOHN W. EVANS, A. B., Assistant Professor of Journalism.
 AMIDA STANTON, A. M., Assistant Professor of Romance Languages.
 HELEN G. JONES, Ph. B., Assistant Professor of German.
 HARRY V. E. PALMBLAD, A. M., Assistant Professor of German.
 FRANCES E. JOHNSON, A. B., E. E., Assistant Professor of Electrical Engineering.
 RICHARD L. GRIDER, E. M., Assistant Professor of Mining.
 MANUEL C. ELMER, Ph. D., Assistant Professor of Sociology.
 RAYMOND C. MOORE, Ph. D., Assistant Professor of Geology.
 ROBERT M. WOODBURY, Assistant Professor of Economics.
 WINTHROP P. HAYNES, Ph. D., Assistant Professor of Mineralogy and Geology.
 HARRY D. HARPER, A. M., Assistant Professor of Economics and Commerce.
 ALICE WINSTON, A. M., Instructor in Rhetoric.
 HELEN M. CLARKE, Ph. D., Instructor in Correspondence Study.
 HUBERT WILTFONG, Instructor in Forging.
 NELLIE M. STEVENSON, A. B., Instructor in Correspondence Study.
 SARA G. LAIRD, A. M., Instructor in Rhetoric.
 MYRTLE GREENFIELD, A. M., Bacteriologist of the State Water Survey.
 CAROLYN B. SPANGLER, A. B., Instructor in German.
 HAZEL K. ALLEN,† Ph. B., Instructor in Home Economics.
 HAZEL PRATT, A. B., Instructor in Physical Education.
 LAWRENS E. WHITTEMORE, A. M., Instructor in Physics.
 AVIS GWINN, A. B., Instructor in Home Economics.
 WALTER B. BODENHAFFER, A. M., Instructor in Sociology.
 PETER A. F. APPELBOOM, Instructor in Romance Languages.
 ODIS H. BURNS, A. B., Instructor in Public Speaking.
 ANNA G. SABY, A. M., Instructor in Romance Languages.
 SANTIAGO GUTIÉRREZ, Instructor in Romance Languages.
 BERTHA MIX, A. B., Instructor in Physical Education.
 KATE DAUM, A. M., Assistant Instructor in Home Economics.
 SYBIL WOODRUFF, A. B., Assistant Instructor in Home Economics.
 AGNES ANDERSON MURRAY, A. M., Assistant Instructor in Chemistry.

ADMINISTRATIVE COMMITTEE.

F. R. HAMILTON, *Chairman.*

L. D. HAVENHILL.
 F. H. SIBLEY.
 W. H. JOHNSON.

M. SKIDMORE.
 C. C. CRAWFORD.
 H. W. NUTT.
 J. W. EVANS.

† Absent on leave, first semester.

The University Extension Division.

The University Extension Division consists of four departments: Correspondence-Study, General Information, Municipal Reference, Child Welfare.

NOTE.—Bulletins giving detailed information in regard to each of these departments will be sent on request.

THE DEPARTMENT OF CORRESPONDENCE-STUDY.

PURPOSE.

The purpose of the Department of Correspondence-Study is to assist those who have not been able to secure a higher education through the regular channels, either to inform themselves on some particular subject or to prepare for College work in residence.

HISTORY.

In 1891 University Extension had its beginning at the University of Kansas in courses of lectures, both informational and cultural, given at various points in the state by University professors. The idea of extending the University's usefulness was further developed in 1903 by the opening of a Summer Session. The establishment, in 1909, of the Correspondence-Study Department of the University Extension Division was the final step in the effort to make the University serve in every way possible the educational needs of the state.

GRADES OF WORK OFFERED.

Most of the work offered is of university grade, but certain high-school courses are provided, and the number of vocational courses is being increased.

THE SYSTEM.

PROCEDURE. The student who wishes to undertake correspondence study should first select such course or courses as he may desire to take, and should fill out the blank with all the information called for, returning it with the required fee to the office of the Extension Division.

THE LESSON SHEETS. If the instructor approves the application, the first lesson will be sent, with instructions for study and methods of preparation, and directions for returning lesson sheets and reports. Each lesson will be returned to the student with such corrections, explanations, and suggestions as may be needed. Lists of books, assignments for reading, and all necessary assistance will be furnished throughout the course, so that no student will be left without adequate aid and guidance. Questions on the subject in hand are at all times encouraged.

Each assignment contains questions to test the student's methods of work as well as his understanding of the ground covered. After preparing for recitation the student writes his answers to the questions and returns them, together with a statement of any difficulties which may have arisen during his study.

BY WHOM PREPARED. These courses are prepared by the members of the University Faculty, and each represents a definite amount of work, corresponding to an equivalence of work done in residence at the University or in the standardized schools of our educational system.

THE UNIT COURSE. The unit course is divided, where practicable, into forty assignments, representing a five-hour course in residence. Such a course represents at least an amount of work equal to that done in residence at the University in a study of five full recitation-hours per week for one semester or half year. It is assumed that this work may be done by the average student in forty weeks with a minimum leisure for study of one hour per day, six days in the week. It is, however, the student's privilege to pursue his studies as rapidly as he is able. Shorter courses are ordinarily divided into fifths of the unit course of forty assignments, corresponding to three-hour, two-hour, or one-hour courses in resident work at the University. A three-hour course in residence, then, would be covered by correspondence teaching in twenty-four assignments, and shorter courses in proportion. Two assignments in correspondence approximately cover the ground of a week's work in residence.

EXAMINATIONS. Examinations are optional with the student, but are required where credits are sought. These examinations must be taken at the University, or under conditions approved by the University. In the latter case, arrangements may often be made with the local superintendent of schools to conduct the examination.

Regulations.

1. Students may begin correspondence courses at any time during the year, but the Department can not guarantee that all the courses will be given during the summer months.

2. For admission to the Correspondence-Study Department no preliminary examination is required. The student is required to fill out an application blank giving such information as may be helpful in adapting the instruction to the personal needs of each student.

3. Students who undertake correspondence-study work for University credit must state this fact in advance and comply with all the requirements of the University.

4. Persons who seek a University degree must conform to all the requirements exacted by the college or school in which such degree is sought. A maximum of one-half the required credits for the A. B. degree may be accumulated through correspondence. The work of the earlier part of the course is more likely to be available for correspondence study. The last thirty hours must be taken in residence.

5. Combinations of correspondence study and the residence work of the Summer Session are possible and recommended.

6. For the benefit of the Department it is desired that the applicant state fully the purpose he has in view in taking the work, and also in detail such educational advantages, training, or experience as he may have had. The Department endeavors to meet the needs of the individual student by advice and suggestions, as well as by formal instruction, but whenever it finds that the course elected is not for the best interests of the student it reserves the right to reject the application, or to advise change or discontinuance.

7. Correspondence students will be expected to complete a unit course within twelve months from the time of enrollment.

8. During an instructor's vacation a substitute will be provided to carry on such course or courses, if possible, or the time for completing the courses will be extended.

9. No fee is refunded because of a student's inability to enter upon or pursue a course for which he has once registered. If an application for instruction is rejected the fee is returned.

10. Each correspondence course is equivalent to the corresponding residence course, and commands credit unless definite statement is made to the contrary.

11. Not more than two courses may be carried through correspondence study at one time. Each subject listed under the various departments is a course; for example: first-year English is one course, German I is one course.

12. Students enrolling for credit must meet the prerequisite conditions for each course. This regulation may be waived by the instructor for a student enrolling not for credit.

Special Engineering Regulations.

1. Not more than one-fourth of the number of unit hours of credit required for graduation in any engineering department may be obtained through correspondence study.

2. Not more than seven hours of credit in sequence in courses which are interdependent may be obtained through correspondence.

3. A failure in any branch in residence may not be made up through correspondence.

University Credit.

1. University credit can be granted only to students who have met the entrance requirements of the University. Upon satisfactory completion of a correspondence course designed for credit, the student will be awarded a certificate of credit in the University. Other students' grades will be recorded merely in the files of the department and certificates issued for the same.

2. The maximum credit granted for work done by correspondence study may not exceed one-half the unit hours required for graduation.

3. At the completion of each correspondence-study course for University credit the student shall pass an examination held under the direction of the instructor giving such course, or by some one designated by the University for that purpose.

4. Work taken for credit may not be done by any student while in attendance at any institution of learning.

5. Admission credit is given for courses covering college entrance requirements which are satisfactorily completed and passed by examination.

6. University credit is given for courses of college grade satisfactorily completed and passed by examination.

7. If the student has a record of residence work in the University, credits gained from correspondence courses are immediately transferred to that record; if not, they are held in the Correspondence-Study Department until the student secures such a record covering one year of study in residence.

8. All courses offered by the Correspondence-Study Department, whether taken for University credit or not, are on a uniform basis in reference to the amount of work covered. Courses which are satisfactorily completed have, therefore, a definite value, and all students who successfully complete such courses will be awarded certificates of the grade in which the work is taken.

THE HOUR. The term "hour" means one hour of class work a week for one semester, or half year. The unit course is a five-hour course; that is, one in which the class meets for one hour five days in the week for a half year. One hundred and twenty hours of credit are required to obtain the A. B. degree.

EXPENSES.

FEES. The only fee charged is the incidental fee of \$10 a year for residents of Kansas, or \$15 for nonresidents. This applies to all schools of the University. For this amount the student is entitled to tuition for a calendar year, and during that period he may carry two courses at a time. The incidental fee must be paid each year that the student re-

enrolls for study. If a correspondence student should later come into residence at the University he would then be required to pay the \$5 matriculation fee. The fee for correspondence-classroom study is \$15 per year.

PAYMENTS. The incidental fee may be paid in monthly installments of five dollars when the student finds it necessary. In this plan the general rule of payment in advance applies. No extra charge is exacted for a course where payments are made by installments. *But in every case at least five dollars of the required fees must accompany the application.*

HOW TO REMIT. Money should be sent in the form of postal or express money order, or Kansas City or Chicago draft, made payable to the University of Kansas. Mail to the University Extension Division, Lawrence, Kansas.

BOOKS AND OUTFIT. All necessary textbooks, drawing outfits, apparatus, dissecting material, chemicals, etc., are extra, and must be procured by the student. The student also pays postage on lessons one way.

TRAVELING LIBRARIES. An arrangement has been made with the State Traveling Libraries Commission at Topeka to furnish reference books in loan libraries of five to twelve volumes, a separate library for each of such courses. A library covering the work of a certain course may thus be obtained and used by the student under the following terms:

First. A fee of one dollar is charged and express both ways.

Second. The books may be kept six months.

Third. The student wishing to retain books over six months may do so by paying an extension fee of twenty-five cents.

The courses which need traveling libraries may be learned on application.

CORRESPONDENCE-CLASSROOM STUDY.

If a group of twelve or more students registers to pursue the same course of study, arrangements will be made, when possible, for regular weekly visits of instructors who will conduct classes and hold personal conferences with students.

The tuition for each student enrolling for any one class is \$5 per term of twelve weeks.

For a fee of \$15 per year the student may enroll for as many classes as may be available, no more than two classes, however, to be pursued at the same time.

The extension Division can not guarantee to supply all demands of this nature, but will do so as far as the time of the instructors and the facilities permit.

COURSES OF INSTRUCTION.

ASTRONOMY.

1.—DESCRIPTIVE ASTRONOMY. Twenty-four assignments, three hours College credit.

BOTANY.

1.—ELEMENTARY BOTANY. Forty assignments, five hours College credit.

2.—GENERAL MORPHOLOGY OF PLANTS. Forty assignments, five hours College credit.

3.—PLANT HISTOLOGY. Forty assignments, five hours College credit.

CHEMISTRY.

1.—ELEMENTARY CHEMISTRY. Forty assignments, five hours College credit.

2.—SANITARY AND APPLIED CHEMISTRY. Forty assignments, five hours College or Engineering credit.

3.—QUANTITATIVE ANALYSIS. Forty assignments, five hours College or Engineering credit.

4.—A SPECIAL COURSE IN CHEMICAL WATER ANALYSIS. Part I, forty assignments, five hours College credit. Part II, twenty assignments, two and one-half hours College credit.

5.—QUALITATIVE ANALYSIS. Forty assignments, five hours College or Engineering credit.

6.—CHEMISTRY OF FOOD PRODUCTS. Forty assignments, five hours College credit.

ECONOMICS.

1.—ELEMENTS OF ECONOMICS. Forty assignments, five hours College credit.

2.—BANKING. Twenty-four assignments, three hours College credit.

3.—LABOR PROBLEMS. Twenty-four assignments, three hours College credit.

4.—LIFE INSURANCE. Sixteen assignments, two hours College credit.

EDUCATION.

1.—HISTORY OF ANCIENT AND MEDIEVAL EDUCATION. Twenty-four assignments, three hours College or Education credit.

2.—HISTORY OF MODERN EDUCATION. Twenty-four assignments, three hours College or Education credit.

3.—PRINCIPLES OF EDUCATION. Twenty-four assignments, three hours College or Education credit.

4.—ADMINISTRATION OF PUBLIC EDUCATION. Twenty-four assignments, three hours College or Education credit.

5.—SCHOOL HYGIENE. Twenty-four assignments, three hours College or Education credit.

6.—EDUCATIONAL PSYCHOLOGY. Twenty-four assignments, three hours College or Education credit.

7.—METHODS AND CLASSROOM MANAGEMENT. Twenty assignments, one-half unit of entrance credit.

8.—METHODS OF TEACHING. Twenty-four assignments, three hours College or Education credit.

ENGINEERING.

1.—FREE-HAND AND MECHANICAL DRAWING. Twenty-four assignments, three hours Engineering credit.

2.—MACHINE DRAWING. Twenty-four assignments, three hours Engineering credit.

3.—ELEMENTARY MECHANICS. Not for credit. Sixteen assignments.

4.—MECHANISM AND MACHINE DESIGN. Not for University credit. Thirty-two assignments.

5.—HIGHWAY ENGINEERING. Sixteen assignments, two hours Engineering credit.

6.—ENGINES AND BOILERS. Twenty-four assignments, three hours Engineering credit.

12.—COAL MINING. Credit may be given to students having sufficient preparation. Forty assignments, five hours Engineering credit.

For additional mining courses, see announcement of courses 50 to 60.

*14.—ELEMENTARY MINERALOGY. Forty assignments, five hours College or Engineering credit.

*15.—GENERAL GEOLOGY. Forty assignments, five hours College or Engineering credit.

*16.—ECONOMIC GEOLOGY. Forty assignments, five hours College or Engineering credit.

17.—THE ELEMENTS OF TELEPHONY. Not for credit. Twenty-four assignments.

19.—REINFORCED CONCRETE. May be taken only by students of advanced standing and graduate engineers. Twenty-four assignments, three hours Engineering credit.

20.—ARCHITECTURAL DRAWING. Three hours Engineering credit will be given, provided the work of five assignments is done at the University under personal instruction. Part I, twenty assignments; part II, twenty assignments.

23.—WORKS MANAGEMENT. May be taken for engineering credit by students who have done a sufficient amount of work to give them standing with the Junior class. Sixteen assignments, two hours Engineering credit.

24.—PLANE SURVEYING. When accompanied by field work of a satisfactory nature Engineering credit will be given. Forty assignments, five hours Engineering credit.

25.—RAILWAY SURVEYING. Forty assignments, five hours Engineering credit.

25a.—RAILWAY DRAWING. Twenty-four assignments, one hour Engineering credit.

26.—HYDRAULICS. Twenty-four assignments, three hours Engineering credit.

Vocational Courses.

(University credit is not given.)

1.—SHOP MATHEMATICS. Forty assignments.

2.—DRAWING. Twenty assignments.

3.—MACHINE DRAWING. Ten or twenty assignments.

* See, also, courses 1, 2 and 3 under Mineralogy and Geology.

- 4.—ARCHITECTURAL DRAWING. Twenty assignments.
- 10.—ELEMENTS OF CHEMISTRY. Ten assignments.
- 11.—MATERIALS OF MACHINE CONSTRUCTION. Ten assignments.
- 20.—STEAM ENGINEERING. Forty assignments.
- 21.—GAS, GASOLINE, AND OIL ENGINES. Ten assignments.
- 29.—DIRECT CURRENT ELECTRICITY. Twenty assignments.
- 30.—ALTERNATING CURRENT ELECTRICITY. Twenty assignments.
- 31.—SWITCHBOARDS AND CONTROLLING DEVICES. Ten assignments.
- 32.—ELEMENTS OF ILLUMINATION. Twenty assignments.
- 50.—MINE SURVEYING OR MINE ENGINEERING. Forty assignments.
- 51.—MINE ACCIDENTS: CAUSES AND PREVENTION. Fifteen assignments.
- 52.—GENERAL MINING. Twenty assignments.
- 53.—ORE DRESSING: CONCENTRATION OF ORES. Twenty assignments.
- 54.—EXPLOSIVES. Ten assignments.
- 55.—VENTILATION OF MINES. Ten assignments.
- 56.—COAL MINING. Twenty assignments.
- 58.—ORIGIN AND OCCURRENCE OF SALT. Ten assignments.
- *60.—FIRST AID AND RESCUE WORK.

ENGLISH.

- 1.—RHETORIC AND ENGLISH COMPOSITION. Forty assignments, five hours College or Engineering credit.
- 2.—NARRATION AND DESCRIPTION. Forty assignments, five hours College credit.
- 3.—ENGLISH LITERATURE. Forty assignments, five hours College credit.
- 4.—HISTORY OF ENGLISH LITERATURE. Forty assignments, five hours College credit.
- 5.—ENGLISH LITERATURE OF THE EIGHTEENTH CENTURY. Forty assignments, five hours College credit.
- 7.—AMERICAN LITERATURE. Twenty-four assignments, three hours College credit.
- 8.—VICTORIAN LITERATURE. Forty assignments, five hours College credit.
- 9.—HISTORY OF THE ENGLISH DRAMA. Twenty-four assignments, three hours College credit.
- 10.—BROWNING. Twenty-four assignments, three hours College credit.
- 11.—MODERN ENGLISH GRAMMAR. Sixteen assignments, two hours credit.
- 12.—ELIZABETHAN DRAMA (EXCLUSIVE OF SHAKSPERE). Twenty-four assignments, three hours College credit.

ENTOMOLOGY.

- 1.—INTRODUCTORY ENTOMOLOGY. Forty assignments, five hours College credit.
- 2.—SYSTEMATIC ENTOMOLOGY. Sixteen assignments, two hours College credit.
- 3.—APPLIED ENTOMOLOGY. Sixteen assignments, two hours College credit.

* Since this work will be carried out in coöperation with the federal bureau officials, it will be necessary to conform to the schedules of the car, and the instruction will be given by special arrangement instead of by the regular method of fixed assignments.

4.—THE ROLE OF INSECTS IN THE SPREAD OF DISEASE. Not for University credit. Sixteen assignments.

GERMAN.

1.—GERMAN I. Forty assignments, five hours College or Engineering credit.

2.—GERMAN II. Forty assignments, five hours College credit.

3.—GERMAN III. Forty assignments, five hours College credit.

4.—GERMAN IV. Forty assignments, five hours College credit.

5.—GERMAN V. Twenty-four assignments, three hours College credit.

6.—(GERMAN V.) COMPOSITION. Twenty-four assignments, three hours College credit.

7.—GOETHE'S FAUST (Parts I and II). Twenty-four assignments, three hours College credit.

8.—THE CLASSIC DRAMA. Forty assignments, five hours College credit.

9.—(GERMAN 8 AND 9.) SCHILLER'S DRAMAS. Forty assignments, five hours College credit.

GREEK.

1.—ELEMENTARY GREEK. Forty assignments, five hours College credit.

2.—XENOPHON'S ANABASIS. Forty assignments, five hours College credit.

3.—HOMER'S ILIAD. Twenty-four assignments, three hours College credit.

HIGH-SCHOOL BRANCHES.

The high-school work now offered is as follows:

ENGLISH:

First year	(40 assignments) one unit.
Second year	(40 assignments) one unit.
Third year	(40 assignments) one unit.
Fourth year	(40 assignments) one unit.
American Literature.....	(20 assignments) one-half unit.

LATIN:

Beginning	(40 assignments) one unit.
Cæsar	(40 assignments) one unit.
Cicero's Orations	(40 assignments) one unit.
Virgil	(40 assignments) one unit.

MATHEMATICS:

Elementary Algebra, Part A	(40 assignments) one unit.
Elementary Algebra, Part B	(20 assignments) one-half unit.
Plane Geometry	(40 assignments) one unit.
Solid Geometry	(20 assignments) one-half unit.
Plane Trigonometry	(20 assignments) one-half unit.

GERMAN:

First year	(40 assignments) one unit.
Second year	(40 assignments) one unit.
Third year	(40 assignments) one unit.

HISTORY:

Ancient	(40 assignments) one unit.
Medieval and Modern.....	(40 assignments) one unit.
English	(40 assignments) one unit.
American	(40 assignments) one unit.

FRENCH:

First year	(40 assignments) one unit.
Second year	(40 assignments) one unit.

SPANISH:

First year	(40 assignments) one unit.
Second year	(40 assignments) one unit.

PSYCHOLOGY (20 assignments) one-half unit.

METHODS AND MANAGEMENT (20 assignments) one-half unit.

HISTORY.

- 1.—AMERICAN HISTORY. Forty assignments, five hours College credit.
- 2.—ENGLISH HISTORY. Forty assignments, five hours College credit.
- 3.—AMERICAN GOVERNMENT. Forty assignments, five hours College credit.
- 4.—MUNICIPAL GOVERNMENT. Twenty-four assignments, three hours College credit.
- 5.—MUNICIPAL PROBLEMS. Sixteen assignments, two hours College credit.
- 6.—MODERN EUROPEAN HISTORY. Twenty-four assignments, three hours College credit.

HOME ECONOMICS.

- 1.—HOME DECORATION. Sixteen assignments, two hours College credit.
- 2.—FOOD AND NUTRITION. Twenty-four assignments, three hours College credit.
- 3.—PUBLIC ASPECTS OF THE HOUSEHOLD. Twenty-four assignments, three hours College credit.

JOURNALISM.

- 1.—THE THEORY AND PRACTICE OF ADVERTISING. Twenty-four assignments, three hours College credit.
- 2.—THE NEWSPAPER. Twenty-four assignments, three hours College credit.
- 3.—THE SHORT STORY. Twenty-four assignments, three hours College credit.
- 4.—RETAIL ADVERTISING. See courses for retail merchant, page 21.
- 5.—PRINTING AND NEWSPAPER COST. Eight assignments, not for credit.

LATIN.

- 1.—ELEMENTARY LATIN. Forty assignments, one unit of entrance credit, or five hours College credit.
- 2.—CÆSAR. Forty assignments, one unit of entrance credit, or five hours College credit.
- 3.—CICERO'S ORATIONS. Forty assignments, one unit of entrance credit, or five hours College credit.
- 4.—VIRGIL'S ÆNEID. Forty assignments, one unit of entrance credit, or five hours College credit.
- 5.—PREPARATORY PROSE COMPOSITION. Twenty-four assignments, no credit.
- 6.—CICERO'S DE SENECTUTE, AND PROSE COMPOSITION. Twenty-four assignments, three hours College credit.
- 7.—HORACE'S ODES. Twenty-four assignments, three hours College credit.
- 8.—PROSE COMPOSITION. Sixteen assignments, two hours College credit.

MATHEMATICS.**I.—College and University Grade.**

- 5.—PLANE TRIGONOMETRY. Sixteen assignments, two hours College or Engineering credit.
- 6.—UNIVERSITY ALGEBRA. Twenty-four assignments, three hours College or Engineering credit.

7.—ANALYTIC GEOMETRY. Thirty-two assignments, four hours College or Engineering credit.

8.—DIFFERENTIAL CALCULUS. Twenty-four assignments, three hours College credit.

8E.—DIFFERENTIAL CALCULUS. Twenty-four assignments, three hours Engineering credit.

II.—Special Course in Mathematics.

1. (VOCATIONAL) SHOP MATHEMATICS. No University credit. Forty assignments.

MINERALOGY AND GEOLOGY.

1.—ELEMENTARY MINERALOGY. Forty assignments, five hours College or Engineering credit.

2.—GENERAL GEOLOGY. Forty assignments, five hours College or Engineering credit.

PHARMACY.

Pharmaceutical Chemistry.

A I.—Elementary Pharmacy Physics and Pharmacy Inorganic Chemistry. Twenty assignments.

A II.—Organic Pharmacy Chemistry, including a discussion of the organic chemicals of pharmacal interest. Should follow course A I. Twenty assignments.

Materia Medica.

B I.—Pharmacognosy with Botanical Introduction. Ten assignments.

B II.—A brief outline of Physiology and introduction to the subject of Materia Medica. Ten assignments.

B III.—Pharmacological and Therapy Dynamics. Fifteen assignments.

B IV.—Toxicology and Posology. Five assignments.

Pharmacy.

C I.—Descriptive Pharmacy. Terms, processes, and apparatus used in pharmal operations. Seven assignments.

C. II.—Metrology, Specific Gravity, and Pharmaceutical Arithmetic. Eight assignments.

C III.—Official Pharmacy. The pharmaceutical classification of medicines. Five assignments.

C IV.—Official Pharmacy. A critical discussion of the pharmaceutical preparations. Fifteen assignments.

C V.—Pharmacy Latin and Principles of Prescription Writing. Three assignments.

C. VI.—Pharmaceutical Jurisprudence. Two assignments.

Independent Pharmacy Courses.

1.—INTRODUCTORY PHARMACY. Twenty assignments.

2.—ORGANIC MATERIA MEDICA. Twenty assignments.

PHILOSOPHY.

1.—GENERAL PSYCHOLOGY. Twenty-four assignments, three hours College credit.

2.—LABORATORY PSYCHOLOGY. Sixteen assignments, two hours College credit.

3.—INTRODUCTION TO PHILOSOPHY. Sixteen assignments, two hours College credit.

4.—HISTORY OF ANCIENT PHILOSOPHY. Twenty-four assignments, three hours College credit.

5.—HISTORY OF MEDIEVAL AND MODERN PHILOSOPHY. Twenty-four assignments, three hours College credit.

6.—ETHICS. Forty assignments, five hours College credit.

PHYSICAL EDUCATION.

1.—SPORT AND GAMES. Sixteen assignments, two hours credit, School of Education.

2.—THEORY OF PHYSICAL EDUCATION. Sixteen assignments, two hours College credit.

The following courses do not carry University credit:

3.—ATHLETICS FOR GIRLS.

4.—PRACTICAL GYMNASTICS.

5.—FESTIVALS, PLAYS, AND GYMNASTIC EXHIBITIONS.

PHYSICS.

1.—ELEMENTARY PHYSICS. Twenty-four assignments, three hours College credit.

2.—MECHANICS, HEAT, AND SOUND. Thirty-two assignments, four hours College or Engineering credit.

3.—LIGHT, ELECTRICITY, AND MAGNETISM. Thirty-two assignments, four hours College or Engineering credit.

4.—MECHANICS, SOUND, AND LIGHT. Twenty-four assignments, three hours College credit.

5.—HEAT, ELECTRICITY, AND MAGNETISM. Twenty-four assignments, three hours College credit.

6.—THEORY OF ELECTRICITY AND MAGNETISM. Twenty-four assignments, three hours College credit.

PHYSIOLOGY.

1.—ELEMENTARY PHYSIOLOGY. Forty assignments, five hours College credit.

2.—HYGIENE AND SANITATION. Twenty-four assignments, three hours College credit.

PUBLIC SPEAKING.

1.—THE COMPOSITION OF PUBLIC ADDRESSES. Twenty-four assignments, three hours College credit.

2.—ORAL INTERPRETATION. Sixteen assignments, two hours College credit.

3.—PRACTICAL PUBLIC SPEAKING. Sixteen assignments, two hours College credit.

ROMANCE LANGUAGES.

1.—ELEMENTARY FRENCH (Part I). Forty assignments, five hours College or Engineering credit.

2.—ELEMENTARY FRENCH (Part II). Forty assignments, five hours College or Engineering credit.

3.—MODERN FRENCH PROSE. Twenty-four assignments, three hours College credit.

4.—FRENCH COMPOSITION. Sixteen assignments, two hours College credit.

5.—SCIENTIFIC FRENCH. Twenty-four assignments, three hours College credit.

6.—FRENCH PROSE AND POETRY. Twenty-four assignments, three hours College credit.

1.—ELEMENTARY SPANISH (Part I.) Forty assignments, five hours College or Engineering credit.

2.—ELEMENTARY SPANISH (Part II). Forty assignments, five hours College or Engineering credit.

3.—MODERN SPANISH WRITERS. Twenty-four assignments, three hours College credit.

4.—SPANISH COMPOSITION. Sixteen assignments, two hours College credit.

1.—ELEMENTARY ITALIAN. Forty assignments, five hours College or Fine Arts credit.

SOCIOLOGY.

1.—ELEMENTS OF SOCIOLOGY. Twenty-four assignments, three hours College credit.

2.—SOCIAL PATHOLOGY. Sixteen assignments, two hours College credit.

3.—SOCIAL SURVEYS. Sixteen assignments, two hours College credit.

ZOOLOGY.

1.—INTRODUCTORY ZOOLOGY. Forty assignments, five hours College credit.

2.—HISTOLOGY. Forty assignments, five hours College credit.

3.—HEREDITY SURVEYS (ZOOLOGICAL PROBLEM). Twenty-four to forty-eight assignments, three to six hours College credit.

SPECIAL COURSES.

The following courses, for merchants and others, do not carry University credit.

Courses in Child Hygiene.

1a.—PRENATAL HYGIENE. Five assignments.

1b.—INFANT HYGIENE. Ten assignments.

2.—HOME NURSING FOR CHILDREN. Eight assignments.

Courses for the Retail Merchant.

1.—RETAIL ADVERTISING. Ten assignments.

2.—SALESMANSHIP. Ten assignments.

3.—BOOKKEEPING. Twelve assignments.

4.—ACCOUNTING PRINCIPLES. Sixteen assignments.

Courses in Law.

1.—ELEMENTARY LAW.

2.—CONTRACT.

Other Special Courses.

1.—WATER PURIFICATION. Ten assignments.

2.—FIRE PROTECTION. Twelve assignments.

3.—VITAL STATISTICS AND DEMOGRAPHY. Eight assignments.

4.—GOVERNMENT AND CITIZENSHIP. Twenty-four assignments.

THE DEPARTMENT OF GENERAL INFORMATION.

The Department of General Information of the University Extension Division of the University of Kansas has been organized with the view of making knowledge more generally available to the people of Kansas. It coöperates with the schools and women's clubs, civic clubs, debating societies, and other similar organizations, and furnishes any available information to citizens of Kansas upon subjects of general interest. The department also issues bulletins on public questions.

LECTURES.

For several years the University of Kansas, through its Extension Division, has arranged for lectures by members of the University Faculty in the different towns in the state.

Single lectures are offered for entertainment, information, and culture; but the Department wishes to emphasize the courses or series of lectures which may be offered to serious-minded students, as affording, at least approximately, the intellectual discipline and information and cultural value of regular University work in residence.

The minimum length of a regular University Extension course is six lectures. Members of University Extension classes who are candidates for credit will be required, besides attendance at lectures, to do additional work prescribed by the lecturer, to include reference and other reading, conferences, and examinations. The maximum credit granted upon the satisfactory completion of such a course will be one semester hour. With the consent of the department concerned, students who are candidates for the master's degree may count *in absentia* work done in Extension lecture courses given by members of the University Faculty to the extent of twelve hours, allowing two hours for each course of twelve lectures.

Musicals by members of the Fine Arts Faculty are also offered.

A bulletin descriptive of the single lectures, courses of lectures, commencement addresses, and musicals offered to Kansas communities will be sent to any address on request.

WOMEN'S CLUBS.

This department offers assistance to any club as an organization or to the individual members. Outlines have been made that will enable clubs to make a comprehensive study of the subjects treated. These outlines are sent out as a two-weeks loan.

Wherever information upon a given topic is available it will be sent on request to individual club members.

PACKAGE LIBRARIES.

Package libraries giving information on subjects of current popular interest are sent out on request and may be retained for a period of two weeks.

LANTERN SLIDES.

Lantern slides designed to supplement instruction in schools, aid libraries and clubs in their educational work, and provide material for lectures and entertainment for various groups of people in the state, can be secured through the Extension Division of the University of Kansas.

Each set of slides is accompanied by a typewritten or printed lecture. These lectures can be supplied in duplicate and furnished in advance of the time for using the slides in order that the person who is to present the lecture may be entirely familiar with the slides and their description.

EDUCATIONAL MOTION-PICTURE FILMS.

About seventy-five educational motion-picture films are now available for the schools and community organizations in Kansas.

DEBATING AND PUBLIC DISCUSSION.

The department has issued a bulletin on debating, and each year issues a bulletin containing references on the question to be argued by the Kansas High School Debating League. It stands ready to assist with references or collected material any other organization interested in debate.

PLAY SERVICE.

In order to assist high-school teachers and amateur dramatic clubs in securing good plays quickly, and without too great an expense, the Extension Division has inaugurated a Play Service Bureau. Upon request this Bureau will recommend and send three or four plays as a three days' loan. Recitations suitable for county contests are sent as a one-week loan.

THE DEPARTMENT OF MUNICIPAL REFERENCE.

The Municipal Reference Department, established in 1910, attempts to do for city officials and citizens what a legislative reference library does for legislators. This department acts as a clearing-house for information and ideas concerning municipal problems, such, for example, as those connected with public utilities, franchises, municipal legislation and ordinances, sanitation, city planning, public improvements, uniform accounting, etc. The experience of cities of Kansas and other states is brought together and analyzed, and the result placed at the service of the municipalities of this state. Copies of model city ordinances and regulations on many municipal subjects are kept on file and furnished on request of city officers and citizens. The coöperation of the faculties of the College, the School of Engineering, and the School of Law enables the department to serve as an information bureau of wide scope and effectiveness for the benefit of the officials and people of the municipalities of the state.

The League of Kansas Municipalities, organized in connection with the Municipal Reference Department, is made up of Kansas cities, the officials of which meet each year in three days' convention for the discussion of municipal problems and the interchange of ideas on city administration and legislation. The proceedings of the convention are printed in *Kansas Municipalities*, the monthly publication of the League, established December, 1914. One hundred and thirty-eight Kansas cities and towns were members of the League in the year 1915-1916.

THE DEPARTMENT OF CHILD WELFARE.

The Department of Child Welfare undertakes to render service to the state in relation to certain definite matters as listed below.

1.—CHILD WELFARE CLUBS. The Department will coöperate with local communities in the formation of parent-teacher associations, mothers' clubs, and other such child-fostering organizations. A bulletin of suggestions may be obtained by writing to the Department.

2.—PLAY ACTIVITIES. The department is interested in the organization and promotion of municipal playgrounds, the establishment of neighborhood centers, and the equipment of the home with suitable play apparatus. Plans for the foregoing will be offered by correspondence.

3.—VACATION INDUSTRY. The department will offer a definite plan whereby a voluntary association of parents, or the municipality itself, may conduct classes for boys in such work as gardening and woodworking.

4.—CIVIC AND SOCIAL CENTERS. The department will assist in the organization of civic and social centers. A plan of procedure including suggestions as to leadership, literature, and a constitution for the proposed club will receive attention from the department.

5.—INDIVIDUAL ADVICE. The department offers individual advice to parents, and to those who wish to make preparation for child-welfare work.

SECTION XII.

The Divisions of Athletics, Libraries, Museums, Publications, State Service Work, University Surveys.

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The Divisions of Athletics, Libraries, Museums, Publications, State Service Work, University Surveys.

ATHLETICS.

Director: WILLIAM O. HAMILTON, A. B.

Athletic Board: *Ex officio* members: Chancellor STRONG, Dr. NAISMITH; Senate representatives: E. W. MURRAY, G. E. PUTNAM, H. A. RICE, J. W. VAN DER VRIES; student representatives: H. A. GRUTZMOCHER, M. S. HEATH, D. H. O'LEARY, W. J. CROWLEY, and E. L. ROLFS.

Professor OLCOTT.

Mr. MCCARTY.

Mr. CLARK.

The Division of Athletics, including intercollegiate and intramural sports, has its headquarters on the upper floor of Robinson Gymnasium, at the west end of the building. Here are located the offices of Prof. W. O. Hamilton, his coaches, and assistants. This division affords all men students the opportunity to take part in sports and athletics. The large, well-lighted games room, 70 by 127 feet, is used for intercollegiate and intramural games. It is equipped with a regulation basket-ball court, 90 by 50 feet, with glass basket stops and two practice basket-ball courts, 60 by 45 feet; it has also a regulation tennis court. On the balcony is located the eighteen-lap running track, banked and cork covered. Special flooring is provided for use of indoor spikes for sprinting, jumping, hurdling, and pole vaulting. A hand-ball and boxing room on the east, and a padded wrestling room on the west adjoin the games room.

Outdoor facilities for carrying on the athletic work are provided at McCook Field. This field is well located with respect to both the University and the town of Lawrence, at the north edge of the campus. It provides three excellent turf-covered football fields, three baseball fields, nine tennis courts, and a one-fifth-mile cinder track. The stands will seat 1500, and are filled to capacity at the great Kansas-Missouri and Kansas-Nebraska football games. Training quarters with lockers, hot and cold showers, massage room, etc., are maintained. No fees are charged for use of these facilities.

SENATE REGULATION. The University Senate has adopted rules governing the standing of all those who represent the University in athletic contests. Good scholarship and gentlemanly conduct are required of all such contestants.

THE ATHLETIC BOARD. All intercollegiate athletic contests are under the control of the University Athletic Board, composed of five students elected by the Athletic Association, four Faculty members appointed by the University Senate, the Chancellor of the University, and the professor of physical education. The last two are *ex-officio* members.

RULES. The athletics of the University are required to conform to a certain standard of scholarship set by the University Senate, and also the rules of eligibility of the Missouri Valley Conference.

CONTROL. All forms of athletics are under the immediate control of the director of athletics and his assistants.

COACHES. All branches of athletics are under the direction of coaches who are also members of the Faculty.

THE ATHLETIC ASSOCIATION is organized to promote the athletics of the University of Kansas. Membership in the association is open to all students. The Chancellor is *ex officio* president of the association.

INTRAMURAL ATHLETICS. The general athletics of the University include football, baseball, basket ball, track, tennis, and soccer. Intramural contests are held in all branches.

INTERCOLLEGIATE GAMES. The University of Kansas is a member of the Missouri Valley Intercollegiate Athletic Association, and a full schedule of games in football, baseball, track, basket ball, and tennis is arranged with members of that association and other educational institutions.

MISSOURI VALLEY CONFERENCES. The University is a member of the Missouri Valley Conferences as follows:

1. The Missouri Valley Conference of Presidents and Governing Board of Institutions, which has general control of athletics as affecting institutions in the conference.

2. The Missouri Valley Conference of Faculty Representatives, having control under the first conference of the details of athletics as affecting the institutions in the conferences, such as eligibility of participants, and so forth.

GENERAL PROVISIONS FOR RECREATION.

All students in the University are encouraged to avail themselves of some form of exercise.

The hand-ball, wrestling, and boxing rooms are available at all times. Basket-ball teams are formed each year.

The swimming pool is always open. It is reserved for the use of women students Mondays and Tuesdays throughout the year, and all are expected to learn to swim. The women's dressing rooms in the gymnasium are supplied with hair dryer, towels, and a woman attendant. In warm weather Potter lake may be used—an artificial lake about an eighth of a mile in circumference, located down the hill north of the gymnasium, within about three minutes walk from the building, and equipped with diving stand, springboard, float, a sanded wading-place, row boat, and dressing tents. Instructors for both men and women are provided.

The tennis courts on McCook Field are open to both men and women.

The girls' athletic field, south of the gymnasium, is equipped with five tennis courts, a hockey field with concrete boundary, an archery field, and space for other games.

A baseball field adjoins McCook Field.

THE LIBRARIES.

Director: _____.

Division Committee: Chancellor STRONG, E. GALLOO, F. H. HODDER, W. L. BURDICK, A. S. OLIN, G. C. SHAAD, B. F. DAINS, C. G. DUNLAP, and C. M. WATSON.

Librarian and Assistants.

CARRIE M. WATSON, A. B., Librarian.
 CLARA SCIOTO GILLHAM, A. B., Loan Desk Librarian.
 ELIZABETH O. WOODRUEFF, A. B., Cataloguer.
 DORA RENN BRYANT, Reference Librarian.
 MARY MAUD SMELSER, Accession Librarian.
 MARY AGNES COLLINS, A. B., Reference Librarian.
 FLAUDE EDDY JOHNSON, A. B., Reference Librarian.
 ETTA A. SMITH, Reference Librarian.
 SARAH EVELYN STANTON, A. B., School of Medicine Librarian.
 NELL KENT HUDSON, A. B., School of Law Librarian.
 ANNA DYKE LEARNARD, Ph. B., School of Engineering Librarian.
 GENEVIEVE DAHLENE, A. B., Biology Librarian.
 MARIE A. HEDRICK, A. B., Philosophy and Mathematics Librarian.
 MAUDE ISABEL SPENCER, Geology Librarian.
 ORETA ELIZABETH MOORE, A. B., Librarian's Clerk.
 OLIVE IRENE BROWN, A. B., Classifier.
 FAYE CECILIA MOYS, A. B., Accession Assistant.

The libraries of the University contain 110,341 bound volumes and some 44,000 pamphlets, in addition to a considerable number of unbound serials and unclassified pamphlets. An annual appropriation of \$20,000 is devoted to the purchase of books. When opportunity permits, rare and unusual books are secured, but thus far the purchase has been regularly dictated by the needs of the various departments and schools of the University. As a result the library is primarily a working library for undergraduates. However, source material in the various departments of knowledge is constantly being added, so that the investigator may have ample facilities for carrying on original work.

The main collection is shelved in the stacks of Spooner Library, but to facilitate use by departments and schools, working collections have been placed in departmental reading rooms, of which seven are in the main library and nine are attached to their respective departments or schools.

A rough estimate of the number of special volumes at the command of these departments and schools follows:

Education (Spooner Library).....	3,214
English (Spooner Library).....	12,506
German (Spooner Library).....	4,598
Latin (Spooner Library).....	2,115
Greek (Spooner Library).....	2,751
Romance Languages (Spooner Library).....	4,850
History (Spooner Library, second floor).....	7,840
Economics (Spooner Library, second floor).....	3,858
Sociology (Spooner Library, second floor).....	2,800
Biology (Snow Hall).....	4,079
Chemistry (Chemistry Building).....	2,912
Engineering (Marvin Hall).....	5,371
Geology (Haworth Hall).....	2,237
Law (Green Hall).....	8,657
Mathematics (Administration Building).....	2,000
Philosophy (Administration Building).....	2,700
Physics (Blake Hall).....	1,056
Medicine (Bell Memorial Hospital, Rosedale).....	5,406

Information in regard to the character of these collections will be found in the statements of their respective departments or schools. Each is in charge of an assistant librarian. The special periodicals pertaining to each are distributed among these libraries.

BOOKSTACKS. There are five stories in the stack room of the library, each eight feet high, so that all the books are within easy reach. The stacks and the flooring of these rooms are of steel. Books are classified and arranged on the shelves by the Dewey system.

CATALOG. The catalog of the library contains about 180,000 cards. The author and subject cards are arranged in one alphabet. The cards are arranged in cases in the general reading room.

THE GENERAL READING ROOM. The general reading room is a large, comfortable and well-equipped room, on the main floor of the library. In this room are about 1000 volumes of general reference books, cyclopedias, dictionaries, Poole's Index to Periodical Literature, and other books which are of special value for reference purposes.

PERIODICAL ROOM. The University provides in this room 1143 periodicals and publications of learned societies. The list is made as representative as possible of the important publications of America and Europe. The back numbers are kept on file for reference, and bound as rapidly as funds permit. The completion of the sets is now under way.

Through the courtesy of their editors, 393 Kansas newspapers are contributed to the periodical room.

LIBRARY REGULATIONS.

Spooner Library Building is open every day in the year, Sundays and holidays excepted. The general reading room is open from eight a. m. to ten p. m., when the University is in session, and during vacation from eight a. m. to six p. m. Hours for the departmental reading rooms vary with the departments, but all are open from eight a. m. to five p. m.

Liberal facilities for using the library are offered to all members of the University. All books, except reference books and books too rare to be easily replaced, may be taken from the library by the students for three weeks. However, if a book is needed for a special purpose or a class reservation, it may be recalled by the librarian, and must be returned as soon as notice is received.

The privileges of the general reading room are open to citizens of Lawrence, and, in fact, to all Kansans; but books may be taken from the building only by members of the University.

MEMORIAL GIFTS.

Interest on the Kappa Alpha Theta memorial fund, in memory of May Sexton Agnew, is used for the purchase of books in English literature.

Two memorial gifts were received during the year 1914-'15. The professional library of the late Professor Henry C. Hill was given to the Law School by his father, Edward F. Hill, of Cape Elizabeth, Maine. By the wish of the late Dean F. O. Marvin, his professional library was given to the Engineering School. It has been appropriately shelved as a background for the bust of Dean Marvin by those alumni who presented the bust.

THE LAWRENCE PUBLIC LIBRARY.

The public library of Lawrence is open to students. This library contains 12,389 volumes, mainly of general literature and fiction, and 2250 public documents.

THE LIBRARIES IN TOPEKA.

The state library and the state historical library, both in Topeka, are easily accessible for the investigator.

THE MUSEUMS.

Director: FRANK STRONG, Ph. D.
Division Committee: _____.

Curators.

SAMUEL J. HUNTER, A. M., Curator of the Entomological Collections.
 ERAMUS HAWORTH, Ph. D., Curator of the Geological and Mineralogical Collections.
 WILLIAM C. STEVENS, M. S., Curator of the Herbarium.
 ALEXANDER M. WILCOX, Ph. D., Curator of the Classical Museum.
 BENNETT M. ALLEN, Ph. D., Curator of the Vertebrate Paleontological Collections.
 HANDEL T. MARTIN, Assistant Curator of the Vertebrate Paleontological Collections.
 CHARLES D. BUNKER, Assistant Curator of Mammals, Birds, and Fishes.
 RAYMOND BEAMER, A. B., Assistant Curator of Entomological Collections.

The scientific collections of the University are extensive and valuable. They were begun in 1872 by the late Dr. Francis H. Snow, and have been obtained chiefly by University exploring parties in western Kansas, Colorado, Wyoming, Arizona, New Mexico, Texas, Oregon, British America, Alaska, Greenland, and South America. These expeditions have been mainly under the direction of the late Dr. Francis H. Snow, Dr. Samuel W. Williston, Dr. C. E. McClung, Prof. Lewis L. Dyche, Prof. M. A. Barber, and Mr. Frank Agrelius. Twenty-six of these expeditions were conducted by the late Doctor Snow personally. By means of the material thus accumulated, a system of exchanges has been established with leading institutions and naturalists in all parts of the United States, so that the cabinets contain a very satisfactory representation of the fauna and flora, both recent and extinct, not only of the state of Kansas, but also of the whole of North America. The collections are nearly all housed in the Dyche Museum of Natural History.

ENTOMOLOGY.

Professor HUNTER.
 Mr. BEAMER.

The foundation for these extensive collections is the Francis Huntington Snow collection, the result of numerous expeditions and frequent exchanges conducted by the late Doctor Snow. In the collections there are in all about 1000 types determined by leading specialists in the respective groups. The collections now comprise about 27,000 species and 300,000 specimens, representing all the different order of insects.

The orders of Lepidoptera, Coleoptera, Diptera, Orthoptera and Hemiptera are especially well represented. In the Coleoptera there are over 10,000 species; the Melanopli in Orthoptera are fully represented; the collections of Coccidæ in Hemiptera afford an excellent series for study of North American forms. These collections are being augmented annually through the University Biological Survey, which is an intensive and consecutive systematic survey of all forms found within the state, their distribution, and biology. The collection, as a whole, is one of the largest connected with any educational institution in the United States.

The work in connection with the museum now affords opportunity for study throughout the entire year, in the summer months on the survey, and in the winter months on a continuation of the study of the material obtained throughout the summer. A series of monographs on Kansas forms has been prepared and others are in progress. It is expected that these will be brought together in uniform size and binding.

Specialists frequently visit these collections for recourse to the large representation of types, and such visitors are always welcome. In order to insure the preservation of "types" it has been deemed advisable to adopt the policy of retaining all "types" in the museum.

These collections are of further practical value to the people of the state in the determination of the injurious and beneficial insects and answers to numerous inquiries upon this subject.

The collections occupy a part of the second and third floors in the Dyche Museum of Natural History.

The ornithological collection, occupying the whole of the second floor, contains 10,000 specimens, of which number 2300 are mounted and on exhibition. The remainder, as in the case of the mammal collection, constitutes the study collection.

A series of bird groups, arranged in their natural habitat, and according to their respective life zones, is in the course of construction. This work, when completed, is intended to instruct fully in the breeding, nesting and life habits of the birds from the tropics to the arctics.

The collection of fishes and reptiles, to be found on the basement floor, while incomplete for the fauna of North America, is very complete for the state of Kansas. Both collections are preserved in liquid, and have been classified and catalogued for the ready use of the students.

PUBLICATIONS.

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Division Committee: Chancellor STRONG, F. E. KESTER, P. F. WALKER, F. R. HAMILTON, G. O. FOSTER, L. N. FLINT, W. C. STEVENS, W. A. WHITAKER.

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Engineering Bulletins: Chairman, P. F. Walker.

Humanistic Studies: Chairman, F. H. Hodder.

Science Bulletin: Chairman, F. E. Kester.

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Professor ALLEN.
Mr. MARTIN.

The museum of vertebrate paleontology furnishes not only materials ordinarily lacking for the rounding out of the education of the general student, but offers excellent facilities for research work in the anatomy and phylogeny of extinct vertebrate life. The collections from the rich Kansas fields are especially complete, and the museum includes also representatives from all of the principal geological formations. The collections are distributed about as follows:

Tertiary, 200 genera, 700 species.

Cretaceous, 60 genera, 200 species.

Jurassic, 10 genera, 30 species.

Triassic, 25 genera, 75 species.

Permocarboniferous, 20 genera, 100 species.

From the Tertiary of Kansas, Wyoming, South Dakota, Oregon, and Colorado nearly all of the known genera are represented. Of the Cretaceous animals there are hundreds of specimens, including not a few of exceptional perfection and completeness. There is a very good collection from the John Day region, Oregon, and one of the three collections of Patagonian specimens in the country. The collection of reptiles and birds is particularly valuable.

ZOOLOGICAL COLLECTIONS.

Professor ALLEN.

A representative collection of marine invertebrates from the Atlantic and Pacific coasts and from Bermuda provides material for study and investigation. Very large additions to these collections were made by recent expeditions to Puget Sound.

In the conchological cabinet are included nearly 1000 species of shells, from all parts of the world.

PALEOBOTANY.

Mr. MARTIN.

The collection in paleobotany is especially rich and valuable, representing thousands of specimens. The Dakota and Comanche Cretaceous series are the most extensive, and include many types of species and undescribed forms. In addition to the collection of Tertiary plants, there is a very large and valuable series of Carboniferous plants from Kansas, including many new forms. The collection is placed with that of paleontology. The purchase of a number of cases has made it possible to put on exhibition many more specimens than have been before open for public inspection.

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The greater part of the mammal collection is preserved in the form of scientific or study skins. It comprises several thousand specimens, including skeletons and skulls, which are catalogued and so arranged that easy access may be had by those especially interested in this work.

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of the present staff is given above. Up to the present time the financial support of the University of Kansas Engineering Experiment Station has been through the appropriations granted to the various departments of the Engineering School, and the work of investigation has been carried on by men regularly appointed to the instructional staff, but relieved of teaching duties to some extent in order to give time for special investigations.

Subjects on which investigations are in progress are as follow:

- The adaptability of Kansas rock to road building.
- A study and classification of the different commercial bituminous paving materials.
- Methods of waterproofing cement mortars and concrete.
- General survey of concrete aggregate, sand and stone, of the state.
- Investigation as to time of removal of forms from concrete.
- The effect of temperature on the time of setting of concrete.
- An investigation of the highway bridges of the state, and improvements in design.
- The effect of repeated stresses on concrete.
- Investigation of stresses in railroad track.
- Study of railroad track drainage.
- Investigation of paving brick of Kansas.
- Results of analyses of the surface waters of Kansas.
- Investigation of methods of sewage disposal suited to conditions in Kansas.
- The relation of water supplies, water purification, sewerage, and sewage disposal to the public health of Kansas cities.
- The relation of air supplies to public health problems.
- The purification of water used in swimming pools.
- An investigation of the suitability of the sands of Kansas as filter media in water purification.
- The supply of electricity for lighting and power in small cities.
- The fixing of fair rates for electricity when furnished by small plants.
- Data covering "white way" lighting systems as such systems are adapted to Kansas Cities.
- An investigation of the starting of synchronous motors and the operating characteristics of such motors.
- Investigation of losses in automobile transmission gears.
- The burning of low-grade fuel in boiler furnaces.
- Effects of moisture injected into the cylinders of gasoline engines.
- The properties of lubricating oils.
- Survey of Kansas coals with regard to improvement by washing.
- Efficient concentration of lead-zinc ores.
- School buildings, grade and high schools, with particular reference to fireproofing, lighting, ventilation, and sanitation.
- Courthouses, and other county and municipal buildings.
- The preparation of standard building laws suitable for communities of different sizes.
- Survey of industries of the state and of industrial resources.
- Investigation of power and heat distribution in cement mills.

STATE SURVEYS.

Director: FRANK STRONG, Ph. D.

Division Committee: _____.

BIOLOGICAL SURVEY.

Professor ALLEN, Zoölogist.

Professor HUNTER, Entomologist.

Assistant Professor STERLING, Botanist.

Each summer the departments of botany, zoölogy, and entomology send out observation parties to study the forms of life constituting their respective fields. These parties are composed of biologists and advanced students of biology, mainly from the University of Kansas. The records of their observations are issued in separate reports and in the science bulletins of the University. By means of the collections made it is hoped to secure for the museums a complete representation of the animal and plant life of the state.

ANALYSIS OF FOOD AND DRUGS.

Professor BAILEY, Chemist.
Professor SAYRE, Pharmacist.

The Kansas food and drugs act of February 14, 1907, requires analyses of food products to be made by the chemistry departments of the University and the Agricultural College, analyses of drugs to be made by the School of Pharmacy of the University. These analyses are made upon samples of foods and drugs collected by the special food and drug inspectors appointed by the State Board of Health. A special laboratory has been fitted up for the analysis of food and another for the analysis of drugs.

The chemists in these laboratories not only make examinations of the samples that are sent in by the official inspectors, but they devote considerable time to a study of the condition of the market, to see if adulteration exists.

The Departments of Bacteriology and Entomology collaborate with the Department of Chemistry and the School of Pharmacy in making reports on food and drugs.

WEIGHTS AND MEASURES.

Assistant Professor STIMPSON.

In 1868 the state law designated the Chancellor *ex officio* state sealer of weights and measures. The University has in its custody complete sets of the different standards of weights and measures, together with the necessary equipment of balances and other apparatus to make them available for use. These standards are of high accuracy and are certified by the United States government through the National Bureau of Standards, and are by law the authorized public standards of the state. A deputy state sealer, who is a member of the Faculty, gives a large part of his time to this work. He compares and adjusts, free of charge, all county, municipal, and other official standard weights and measures. He will also compare and adjust weights and measures for business houses, institutions, and others who may desire such comparisons made. For this work a small fee, which is set by law, is charged.

ENGINEERING EXPERIMENT STATION.

FRANK STRONG, Ph. D., Chancellor of the University.
P. F. WALKER, M. M. E., Director, Mechanical Engineering.
GEO. C. SHAAD, E. E., Electrical Engineering.
H. A. RICE, C. E., Mechanics and Civil Engineering.
GOLDWIN GOLDSMITH, Ph. B., Architectural Engineering.
A. C. TERRILL, M. S., Mining Engineering.
W. A. WHITAKER, M. A., Chemical Engineering.

ORGANIZATION AND PURPOSE.

Engineering experiment stations have been organized in several of the technical schools in the United States, their purposes, in the main, being as follows: to correlate and systematically group together the results of scientific investigations as they are conducted under the various departments of the schools; to plan, organize, and direct additional work to be carried out by the departments of the school along lines which will be of practical benefit to engineers in general and to the state or the locality in which the school is situated in particular; to act in stimulating and elevating the engineering education given by the school; and to arrange for the publication and distribution of the results of engineering and industrial research work. The University of Kansas organized such a station in 1908, with the Dean of the School of Engineering as Director and the balance of the staff made up of the Chancellor of the University and the heads of the various engineering departments. The personnel

of the present staff is given above. Up to the present time the financial support of the University of Kansas Engineering Experiment Station has been through the appropriations granted to the various departments of the Engineering School, and the work of investigation has been carried on by men regularly appointed to the instructional staff, but relieved of teaching duties to some extent in order to give time for special investigations.

Subjects on which investigations are in progress are as follow:

- The adaptability of Kansas rock to road building.
- A study and classification of the different commercial bituminous paving materials.
- Methods of waterproofing cement mortars and concrete.
- General survey of concrete aggregate, sand and stone, of the state.
- Investigation as to time of removal of forms from concrete.
- The effect of temperature on the time of setting of concrete.
- An investigation of the highway bridges of the state, and improvements in design.
- The effect of repeated stresses on concrete.
- Investigation of stresses in railroad track.
- Study of railroad track drainage.
- Investigation of paving brick of Kansas.
- Results of analyses of the surface waters of Kansas.
- Investigation of methods of sewage disposal suited to conditions in Kansas.
- The relation of water supplies, water purification, sewerage, and sewage disposal to the public health of Kansas cities.
- The relation of air supplies to public health problems.
- The purification of water used in swimming pools.
- An investigation of the suitability of the sands of Kansas as filter media in water purification.
- The supply of electricity for lighting and power in small cities.
- The fixing of fair rates for electricity when furnished by small plants.
- Data covering "white way" lighting systems as such systems are adapted to Kansas Cities.
- An investigation of the starting of synchronous motors and the operating characteristics of such motors.
- Investigation of losses in automobile transmission gears.
- The burning of low-grade fuel in boiler furnaces.
- Effects of moisture injected into the cylinders of gasoline engines.
- The properties of lubricating oils.
- Survey of Kansas coals with regard to improvement by washing.
- Efficient concentration of lead-zinc ores.
- School buildings, grade and high schools, with particular reference to fireproofing, lighting, ventilation, and sanitation.
- Courthouses, and other county and municipal buildings.
- The preparation of standard building laws suitable for communities of different sizes.
- Survey of industries of the state and of industrial resources.
- Investigation of power and heat distribution in cement mills.

STATE SURVEYS.

Director: FRANK STRONG, Ph. D.

Division Committee: _____.

BIOLOGICAL SURVEY.

Professor ALLEN, Zoölogist.

Professor HUNTER, Entomologist.

Assistant Professor STERLING, Botanist.

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Assistant Professor STIMPSON.

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ENGINEERING EXPERIMENT STATION.

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P. F. WALKER, M. M. E., Director, Mechanical Engineering.
GEO. C. SHAAD, E. E., Electrical Engineering.
H. A. RICE, C. E., Mechanics and Civil Engineering.
GOLDWIN GOLDSMITH, Ph. B., Architectural Engineering.
A. C. TERRILL, M. S., Mining Engineering.
W. A. WHITAKER, M. A., Chemical Engineering.

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Engineering experiment stations have been organized in several of the technical schools in the United States, their purposes, in the main, being as follows: to correlate and systematically group together the results of scientific investigations as they are conducted under the various departments of the schools; to plan, organize, and direct additional work to be carried out by the departments of the school along lines which will be of practical benefit to engineers in general and to the state or the locality in which the school is situated in particular; to act in stimulating and elevating the engineering education given by the school; and to arrange for the publication and distribution of the results of engineering and industrial research work. The University of Kansas organized such a station in 1908, with the Dean of the School of Engineering as Director and the balance of the staff made up of the Chancellor of the University and the heads of the various engineering departments. The personnel

SECTION XIII.

Roll of Students, etc.

(395)

SECTION XIII.
Roll of Students, etc.

(395)

THE COLLEGE.

SENIORS.

- Ainsworth, Lydia Louise; Lyons.
 Allvine, Glendon; Kansas City.
 Amos, Thyrsa Wealtha; Spivey.
 Anderson, Freda Emma May; *Pueblo, Colo.*
 Anderson, Mabel; Lawrence.
 Anderson, Nathan Lyle; Partridge.
 Anderson, Zella May; Lawrence.
 Angevine, Dorothy Lou; Lawrence.
 Appel, Hilmar George; Lawrence.
 Ashton, Annette Hughes; Lawrence.
 Atkinson, Lila; Lawrence.
 Auchard, Ralph Emerson; Clay Center.
 Bacon, Robert Binford; Hutchinson.
 Baker, Fenton, J.; *Joplin, Mo.*
 Bavsinger, Charles Earl; Hartford.
 Beckley, Grace; Cherryvale.
 Bell, Myra Arlowein; Leavenworth.
 Bigelow, Dorothy Eugenie; Oberlin.
 Bixby, Abigail Cornelia; McPherson.
 Bixler, Ella Grace; Iola.
 Blackburn, Vera Edith; Larkinburg.
 Blackfan, Lucile Lawrence; Halstead.
 Blair, John Alvin; McPherson.
 Booth, Myron Murray; Hutchinson.
 Boyles, Bernice; Lawrence.
 Brown, Ben Eli; Iola.
 Brown, Dorothy Thornton; *Joplin, Mo.*
 Brown, George Austin; Baldwin.
 Brownlee, William Oscar; Stafford.
 Burke, Esther Margaret; Lawrence.
 Burkhead, Carl Roscoe; Centerville.
 Burton, Mary Cecile; Lawrence.
 Caffrey, John Parker; Mt. Hope.
 Cain, Augustus Robert; Pittsburg.
 Calene, John Lucian; Sylvan Grove.
 Castles, Ruth Minerva; Lawrence.
 Challiss, John VanHoesen; Atchison.
 Clark, Elizabeth Hallie; *Cherokee, Okla.*
 Clark, Lee Ernest; Winchester.
 Coffin, Dora Belle; Lawrence.
 Cole, Stella Mae; Lawrence.
 Cook, Florence Louise; *Kansas City, Mo.*
 Coons, Glenn Claypool; Independence.
 Cooper, Rebekah Blackwood; Wichita.
 Crawford, R. Harold; Lawrence.
 Crouch, Alice Amelia; *Ft. Stockton, Texas.*
 Cruzan, Evelyn May; *Bethany, Mo.*
 Dail, John Byron; Lawrence.
 Daniel, Harvey Oscar; Lawrence.
 Daniels, Ruth Natalie; Hiawatha.
 Darby, Olin Earnest; Washington.
 Davidson, Roy; Nickerson.
 Deacon, Thomas Crosby; Topeka.
 deMare, Adeline Hunter; Lawrence.
 Dielmann, Reta Hazel; Winfield.
 Dixon, Jessie Lucile; Mound Valley.
 Dryden, Lockie Louise; Larned.
 Duncan, Evelyn Edith; *Excelsior Springs Mo.*
 Duncan, Mabel, *Perry, Okla.*
 Dunigan, Florence Esther; Lawrence.
 Duvall, Alice Lucy; Hutchinson.
 Dyche, Junius Walter, *Oklahoma City, Okla.*
 Dyche, Lewis Lindsay; Lawrence.
 Dykes, Ada; Lebanon.
 Ecroyd, Guy L.; Arkansas City.
 Elliott, Arthur Edward; Lawrence.
 Ellis, Frances Maud; El Dorado.
 Elmore, Mabel Marshall; Tecumseh.
 Else, Daniel Henry; Lawrence.
 Emerson, Ralph Waldo; Osborne.
 Fee, Charles John; Meade.
 Fischer, Elfriede Christine; Lawrence.
 Fischer, Wilbur Alexander; La Cygne.
 Fisk, Harry Clay; Lawrence.
 Fletcher, Liona Blanche; *Lamar, Mo.*
 Foster, Nellie Anderson; Olathe.
 Foster, Ruth Mitchell; Topeka.
 Frederick, James Vincent; Bonner Springs
 Frisbie, Helen Gertrude; Oskaloosa.
 Fuller, Clinton Charles; Peabody.
 Fulton, Robert Roy; *Kansas City, Mo.*
 Gallagher, Helen Marie; Lawrence.
 Galle, James Lamer; McPherson.
 Gardner, Jesse Fleetwood; Preston.
 Gear, Marvin Louis; Buffalo.
 Gilles, Clifford Lawrence; Kansas City.
 Govier, Mary Louise; *Kansas City, Mo.*
 Graff, Marie Octavia; Topeka.
 Gregory, Margurite Electa; Lawrence.
 Griesa, Theodore Scott; Lawrence.
 Griffith, Rosalie May; Lawrence.
 Groene, Everett Kenneth; Kansas City.
 Grutzmacher, Hugh Alton; Onaga.
 Gustafson, Mary; Lawrence.
 Hall, Gail; McPherson.
 Hardy, Frances Mabel; Lawrence.
 Hargett, Ray Hudson; Lawrence.
 Harkrader, Winfred; Pratt.
 Harris, Cathlene Rose; Eudora.
 Hashinger, Edward Hagerman; Lawrence.
 Hawkins, Ashley Dorothy; Lawrence.
 Heacock, Alvin Earl; Attica.
 Heath, William Rea; Lawrence.
 Hedrick, Louise; Friend.
 Heizer, Margaret Rosamond; Osage City.
 Hendrickson, Ethel E.; Lawrence.
 Hepler, Russell Calvin; Cottonwood Falls.
 Hetherington, George Franklin; Topeka.
 Hill, Alfred Gibson; Topeka.
 Hillsman, Itasca; Kansas City.
 Hoar, Florence Eckert; Lawrence.
 Hoffman, Howard Everett; Abilene.
 Holmes, Opal A.; Lawrence.
 Hostetter, Anita Miller; Lawrence.
 Howland, Herbert; Ludell.
 Huffman, Mona Clare; Columbus.
 Hull, Lewis Madison; Nickerson.
 Hullinger, Edwin Ware; Osborne.
 Hunter, Chauncey Depew; Abilene.
 Huntsinger, Ivan W.; Esbon.
 Irvine, Frances Belle; Ft. Scott.
 Irwin, Albert Bristow; Kansas City.
 Ise, Frank Harold; Lawrence.
 Jackson, Ruth S.; Lawrence.
 Jacobs, Sara Frank; McPherson.
 Johnson, John Leon; Hewins.
 Jolliffe, Carl Leon; Hewins.
 Jones, James Edward; Fredonia.
 Jones, Mary Lenora; Lawrence.
 Jones, Miriam Austin; Wichita.
 Jones, Ogden Sherman; Lawrence.
 Kilgore, Violet Georgia; Wichita.
 Kincaid, Beth; Bucyrus.
 King, Muriel Close; Wichita.
 Kirkendall, Mabel Jeanne; Natoma.

West, Ada Helen, A. B. '15, Midland College; Mathematics; *Keokuk, Ia.*
White, Howard, A. B. '16, Southwestern; History; Winfield.
Whitemore, Laurens Ellis, A. B. '14, Washburn, A. M. '15, University of Kansas;
Physics; Topeka.
Wilhite Bessie, A. B. '16, University of Kansas; English; Lawrence.
Williams, Charles G.,* A. B. '17, University of Kansas; Economics; Preston.
Withington, Charles Hall, A. M. '10, University of Kansas; Economics; Lawrence.
Woodruff, Regina, A. B. '12, University of Kansas; Zoölogy; Lawrence.
Wynn, George Earl, A. B. '16, McPherson College; Education; Marquette.
Young, Benjamin Percy, B. S. '08, University of Kansas; Botany; Lawrence.
GRADUATES, 137.

*Seniors who have completed within ten credit hours sufficient work for the A. B. or B. S. degree, and are doing graduate work.

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 Ashton, Annette Hughes; Lawrence.
 Atkinson, Lila; Lawrence.
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 Gilles, Clifford Lawrence; Kansas City.
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 Hullinger, Edwin Ware; Osborne.
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 Huntsinger, Ivan W.; Esbon.
 Irvine, Frances Belle; Ft. Scott.
 Irwin, Albert Bristow; Kansas City.
 Ise, Frank Harold; Lawrence.
 Jackson, Ruth S.; Lawrence.
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 Jones, Mary Lenora; Lawrence.
 Jones, Miriam Austin; Wichita.
 Jones, Ogden Sherman; Lawrence.
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JUNIORS—continued.

- Brown, Nettie Belle; Peabody.
 Brownlee, Aleta Marie; Salina.
 Bryan, Jennie Maude; Waterville.
 Buchanan, Marie Estella; Lawrence.
 Buffington, Ralph Mulvaney; Ness City.
 Bumann, Alice; Lawrence.
 Bunker, Frances May; Alta Vista.
 Burgert, Eran Omer; Lawrence.
 Carman, Justice Neale; Herington.
 Carnie, Kathleen; *Kansas City, Mo.*
 Carr, Pauline Ruth; Augusta.
 Carson, Hazel Ellene; Ashland.
 Carter, John Abell; Lawrence.
 Cazier, Lawrence W.; Wakarusa.
 Champlin, Paul Bertrand; Canton.
 Chandler, Horace Frederick; Atchison.
 Charles, Harry Lytton; Wichita.
 Church, Harry Lester; Pittsburg.
 Clapper, Olive Ewing; *Kansas City.*
 Clayton, Ross Herbert; Hill City.
 Cloud, Calvin Clyde; Admire.
 Cole, Dorothy Walker; Lawrence.
 Cole, Warren Henry; Clay Center.
 Collins, Lucile; Lawrence.
 Cook, Hazel Mearl; Lawrence.
 Cook, Persis Bell; Lawrence.
 Corel, Gladys Fay; Lawrence.
 Cory, Eugenia Frances; Lawrence.
 Cotter, James Rachel; *Kansas City, Mo.*
 Cowgill, Elvyn Spencer; Lawrence.
 Cox, Harold Bernard; Cedarvale.
 Crowley, John J.; Lawrence.
 Curry, Ralph Frey; Lawrence.
 Daum, Frieda; Lawrence.
 Davis, Donald Dwight; Downs.
 Davis, George Andrew; Scottsville.
 Davis, Mary Alice; Chanute.
 Day, Cameron Donald; Lawrence.
 Deibel, Maria; Lawrence.
 Dennis, Foster Leonard; Stockton.
 Derge, David R.; Lebanon.
 Dickerson, Jennie Elizabeth; Peabody.
 Dissinger, Gladys; *Kansas City, Mo.*
 Dolbee, George; Lawrence.
 Dolecek, Edna Helen; Lawrence.
 Dolecek, Edward Elvin; Lawrence.
 Douthitt, Bessie Price; Lawrence.
 Dring, Louilla Ruth; Lawrence.
 Dunne, Marie V.; Wichita.
 Edmonson, Ellen; Newton.
 Edwards, Richard Dix; *Kansas City, Mo.*
 Eichenauer, Bertha; Lawrence.
 Endacott, Ruth Beatrice; Lawrence.
 Fahringer, Stephen Martin; Lawrence.
 Faragher, Ida Keeley; Lawrence.
 Fisher, Merlin; Lawrence.
 Flagg, Paul Eldridge; Lawrence.
 Fleeson, Howard Tebbe; Sterling.
 Fogarty, Katherine; Lawrence.
 Forsythe, Anna Elizabeth; Edgerton.
 Fox, Helen J.; Lawrence.
 Friedberg, Fay Sarah; Topeka.
 Friend, Russell DeVere; Lawrence.
 Fritts, Ralph Victor; Paola.
 Frost, Arl Haskett; Hutchinson.
 Frye, Ora; Lincoln.
 Fuger, Golda Margaret; Wathena.
 Fuller, Ildle Wilson; Lawrence.
 Gard, Blanche Alice; Iola.
 Gardiner, Ruth Bernice; Fredonia.
 Garman, Helen Rose; Lawrence.
 Gaskill, Gussie Esther; Lawrence.
 Giger, Harold Henry; Elmdale.
 Good, Donald Cameron; Hiawatha.
 Gorrill, Clarence Marshall; Lawrence.
 Gossard, Agnes DeMar; Oswego.
 Gott, Henry Vivion; Bronson.
 Gray, Helen Emily; Lawrence.
 Greer, Norman James; Lawrence.
 Griffiths, Arline; Lawrence.
 Grinstead, James Robert; *Pawhuska, Okla.*
 Gurden, Wm. David; Topeka.
 Hackerott, Agnes Marie; Osborne.
 Haddox, Charles; Lawrence.
 Hadley, Ernest Elvin; Alton.
 Hadley, James Wilbur; Coldwater.
 Hanscome, Marcella Morgan; Lawrence.
 Hardacre, James Emerson; *Kansas City, Mo.*
 Harris, Joseph Pratt; Windom.
 Hart, Pattie; Grenola.
 Harter, Gladys; Douglass.
 Hartly, Donald Loa; Lawrence.
 Hawes, Ralph Edward; Wakefield.
 Hawkins, Ulista Alice; *Jasper, Mo.*
 Heath, Milton Sydney; Burns.
 Helmer, Sophia Bertha; Lawrence.
 Henson, Gurrie Ray; Englewood.
 Hertzler, Agnes Hancock; *Kansas City, Mo.*
 Hetler, Donald McKinley; Osage City.
 Hoch, Frank Michael; Wilson.
 Hodder, Margaret; Lawrence.
 Hoffman, Reuben Alvin; Chanute.
 Hoffman, William Edwin; Lawrence.
 Hogeboom, Doris May; Pittsburg.
 Holden, Harley Edwin; Neodesha.
 Hostetler, Ruby Madelyn; Delphos.
 Houston, Blanche Marie; Bucyrus.
 Hunt, Homer Brett; Conway Springs.
 Hunt, Lois Mary; Conway Springs.
 Huntington, Forrest William; Lawrence.
 Huntington, Vivian Belle; Lawrence.
 Hurley, Gertrude Ellen; Leavenworth.
 Hnsson, Margaret Sabina; *Kansas City.*
 Hutton, Jack Gossett; Abilene.
 Hypes, Hazel E.; Topeka.
 Irwin, Margaret L.; Bazine.
 Isenberger, Nathan Perry; Natoma.
 Isenberger, Robert Murray; Natoma.
 Jillion, Everett Leon; Emporia.
 Jobs, Frances Mildred; Mission Hills.
 Johnson, Anna Mary; Kingman.
 Johnson, Frederica Angela; Blue Rapids.
 Johnson, Gladys Marv; Concordia.
 Johnson, Howard Henry; Garnett.
 Johnson, Nellie Phyllis; Republic.
 Johnson, Thurston Leon; McPherson.
 Johnson, William Scott; Lawrence.
 Jones, Stanley Sherman; Lawrence.
 Joseph, Frances Marion; Whitewater.
 Kabler, Jesse Dickinson; Kingman.
 Kauder, Walter Ben; Halstead.
 Kendrick, Hazen; Lawrence.
 Korb, John Herman; Lawrence.
 Kreeck, Charlotte Eloise; Lawrence.
 Krieh, Percival Stover; Lawrence.
 Kubik, Clara Mary; Caldwell.
 Kubik, Emilv Clementis; Caldwell.
 LaCoss, Gertrude Martha; Lawrence.
 Lamb, Hester Marjory; Yates Center.
 Lane, Ruth C. Carrington; Lawrence.
 Laslett, Herbert Reynolds; Lawrence.
 Lauer, Albert Benjamin; Osage City.
 Leibengood, Nelle; Paola.
 Levi, Laura May; Olathe.
 Liggett, Walter Roberts; *Kansas City.*
 Light, Mildred; Lawrence.
 Lingenfelter, Bonnie Matilda; Fredonia.
 Lynam, George; Moline.
 MacGregor, Rose Barbara; Lawrence.
 MacNaughton, Mabel Gertrude; Tonganoxie.
 Mannix, Winnifred; Overbrook.
 Markley, Della Donmyer; Minneapolis.
 Martin, Francis Ivan; Douglass.

JUNIORS—concluded.

- Martin, Lillian Mae; Topeka.
 Mason, Lorinda; Lawrence.
 Means, Lucile Ingels; Hiawatha.
 Metcalf, Ralph Hedges; *Kansas City, Mo.*
 Mitchell, Basil Lyman; Burlington.
 Moody, Minnie Elizabeth; Leavenworth.
 Moore, Thomas Edwin; Hutchinson.
 Morgan, Harry Hill; Alta Vista.
 Moser, Paul; Meriden.
 Mowery, Glenn Edsel; Scott.
 Mowrer, Ernest Russell; Lost Springs.
 Musson, Edith; *Norborne, Mo.*
 Myers, Burton Allen; Osborne.
 McCorkle, Enoch Harvey; Ft. Scott.
 McDonald, Susan Peake; Coffeyville.
 McGinnis, Hugh Thornton; Aulne.
 McHenry, Lloyd Alfred; Baldwin City.
 McKee, Bruce E.; Lawrence.
 McKinney, Helen Julia; Iola.
 McVey, Roy Vernon; Mt. Ida.
 Nicholson, Mary Morse; Newton.
 Noel, Sidney Quinn; Glasco.
 O'Brien, Shamus; Lawrence.
 O'Leary, Dorman Hendichs; Lawrence.
 Palmer, Gertrude Octavia; Lawrence.
 Parker, Jet Collins; Bonner Springs.
 Parkinson, Hazel Emeline; Topeka.
 Patrick, Ruth; Randall.
 Pattinson, Darwin G.; Hutchinson.
 Pedroja, Mary M.; Lawrence.
 Petterson, Edward Chester; Beloit.
 Phenicie, Edith Anna; Tonganoxie.
 Plank, Elizabeth; Lawrence.
 Plank, Opal Marie; *Kansas City, Mo.*
 Porterfield, Louis Myrtle; Holton.
 Potter, Floyd Ezra; Garnett.
 Price, Edwin Fletcher; Wellington.
 Querfield, Dorothy Jessie; Lawrence.
 Quick, Hazel Lois; Redfield.
 Rayburn, Myrtle Francis; El Dorado.
 Raymond, Walter Archie; Rago.
 Reddy, Kathryn; Harper.
 Reding, Katherine Prue; Lawrence.
 Reid, Elsie; Norcatun.
 Reser, Oscar Optima; *Kansas City, Mo.*
 Reynolds, John Alexander; Horton.
 Rice, William Ivan; Lawrence.
 Richter, Theodore Henry; Alma.
 Rickard, Marjorie Adeline; Lawrence.
 Roberts, Harold Moore; Greenburg.
 Roberts, Mary Frances; Lawrence.
 Robertson, Robert Lorin; Lawrence.
 Robinson, Gladys Josephine; Chanute.
 Robinson, Guy Chapman; Kansas City.
 Robinson, Helen Barger; Salina.
 Rockey, Mildred Jeannette; Lawrence.
 Rogers, Annie Isabel; Lawrence.
 Rogers, Lena Edith; Wellington.
 Roop, Celia Esther; Abilene.
 Rose, Mildred Edith; Rosedale.
 Ruble, Mirl Calvin; Parsons.
 Rummel, Emma May; *Independence, Mo.*
 Rush, Ethel May; *Kansas City, Mo.*
 Russell, Cora Thurza; Amarillo, Tex.
 Schell, Mignon Berneice; Wichita.
 Schmidt, Paul Wagner; Junction City.
 Schreiber, Fred Carl; Leavenworth.
 Schultz, Madeline; Barnes.
 Schwarz, Josephine Marie; Wilson.
 Scott, Ethel; Columbus.
 Scott, James M.; Mankato.
 Selig, Mary Frances; Lawrence.
 Senhausen, Julian Louise; Leavenworth.
 Shanton, Lynn Clyde; Kensington.
 Sheets, Linnie Vaetta; Lawrence.
 Shelley, Harold John; Elmdale.
 Shukers, Lucile; Independence.
 Skinner, Frances Marie; Columbus.
 Skinner, Hazel; Garden City.
 Slaven, Eulalia Hazel; Glen Elder.
 Smiley, Clara Pearl; Silver Lake.
 Smith, Elmer Wesley; Norton.
 Smith, Harry Merle; Bucklin.
 Smith, Leland Alexander; Solomon.
 Smith, Mary Ellen; Pleasanton.
 Smith, Polly Margaret; Lawrence.
 Smith, Wint; Mankato.
 Soper, Gail Raney; Hutchinson.
 Soxman, Don John; Lawrence.
 Sperry, Charles Carlisle; Beverly.
 Spreier, Amy; Pawnee Rock.
 Stephens, Brooks Palmer; Kansas City.
 Sterling, John Andrew; Lawrence.
 Sterling, Lucile; Lawrence.
 Stevenson, Edward; Lawrence.
 Stevenson, Harriet Maude; Lawrence.
 Stevenson, Margaretta Price; Leavenworth.
 Stewart, Georgie Leah; De Soto.
 Strivison, Roy Elliot; Lyndon.
 Stockton, Marcellus Lowry; Gridley.
 Stuewe, Ferdinand Charles; Alma.
 Sturgeon, Vivian Virginia; Lawrence.
 Swanson, John Frederick; Marquette.
 Tarrant, Thomas Oliver; Florence.
 Taylor, Marvin Daniel; Moran.
 Thiele, George Henry; Washington.
 Thomann, Frank Charles; Summerfield.
 Thomas, Ruth Laura; Lawrence.
 Thompson, Ina Theo; Marion.
 Thompson, Wiley Lane; Lawrence.
 Thompson, Willard Curtis; Marion.
 Timmins, Vaughn Earl; Kansas City.
 Todd, John Edward; Lawrence.
 Tomlinson, Lydia; Independence.
 Totten, Orpha M.; Beattie.
 Trant, Sara; Edwardsville.
 Tremaine, Minnie D.; Iuka.
 Treweeke, Richard Lewis; Wichita.
 Tucker, Dorothy; Lawrence.
 Uhl, Mignonette; *Carthage, Mo.*
 Van Arsdale, Mary Evangeline; Lawrence.
 Veatch, Harry John; Weir City.
 Wann, Wilfred Curtis; Hays.
 Waters, Jane; Bonner Springs.
 Watson, Charles Hoyt; Kansas City.
 Wattles, Warren Fay; Wichita.
 Weaverling, Helen Charlotte; *Belle Plaine, Ia.*
 Webster, Paul Reichert; Larned.
 Wedd, Helen Frances; Lenexa.
 Weidlein, Nellie; Lawrence.
 Weigand, Herman; La Crosse.
 Weltmer, Wardie Wallace; Smith Center.
 Whitehead, Ennis Clement; Westphalia.
 Wilhelmsen, Karl John; Lawrence.
 Wilson, Ivanhoe Fernando; Lawrence.
 Wilson, Leland Alvin; Chanute.
 Wilson, William Henry; Augusta.
 Windsor, Grace; Lawrence.
 Wise, Monona Deards; Lawrence.
 Wood, Roberta Virginia; Lawrence.
 Woodward, Parke Harold; Wichita.
 Young, Arthur Raymond; Wichita.
 Young, Donald P.; Dodge City.
 Young, Robert Alan; Lawrence.

SOPHOMORES.

- Acre, Joseph; Collyer.
 Akright, James Gladstone; Lawrence.
 Albach, Robert Henry; Lawrence.
 Allen, Clara Louise; LaCygne.
 Allen, William Harry; Columbus.
 Anderson, Mary; Alma.
 Anshutz, William Wallace; Meade.
 Arbuthnot, Sidney Earl; Belleville.
 Arend, Harold Dermont; Downs.
 Arnold, James Winfred; Pratt.
 Atkinson, Eleanor Frances; Lawrence.
 Babcock, Wealthy Consuelo; Hollenberg.
 Bagby, Grace; Lawrence.
 Bailey, LaForce; Lawrence.
 Baird, George Marion; Formoso.
 Bales, Elsie Ruth; Lawrence.
 Banks, Edith Olive; Independence.
 Barger, Esther Virginia; Beloit.
 Barnd, Richard; Ness City.
 Bastgen, Ruby Marie; *St. Joseph, Mo.*
 Baty, Marcia Stanhope; Lawrence.
 Baum, Stella Haines; Galena.
 Beal, Homer; Topeka.
 Beal, Mary Letitia; Hamilton.
 Bell, Ethel Dickinson; Courtland.
 Bell, Kenneth G.; Corliss.
 Bennett, Lawrence; Lovewell.
 Benson, Annie Victoria; *Essex, Conn.*
 Bjork, Harold Irwin; Weskan.
 Blain, Howard Wortham; Ottawa.
 Blair, James Stuart; Lawrence.
 Blair, Nadine; *Belton, Mo.*
 Blair, Warner William; Topeka.
 Bloom, James Britton; Pawnee Rock.
 Blount, Justin Alexander; Larned.
 Bocook, Victor Arnold; Cottonwood Falls.
 Brady, Agnes Marie; Lawrence.
 Branine, Alden Ezra; Newton.
 Brindle, Paul James; Kansas City.
 Brooker, Robert Paul; Peabody.
 Brown, Clara Marie; Lawrence.
 Brown, Howard Dodge H.; Beloit.
 Brown, Karl; Spearville.
 Browne, Mary Marilla; Norton.
 Broyles, Watkins Andrew; Bethany.
 Bruckmiller, Elfrieda Otilia; Lawrence.
 Brush, Percy Pierson; Lawrence.
 Buck, Jessie Lucile; Paola.
 Buckles, Doyle Leon; Sedan.
 Bunker, Susie; Alta Vista.
 Burkholder, Edwin Vernon; Marion.
 Burnett, Mary Margaret; Lawrence.
 Burt, Roy Everett; Lawrence.
 Burton, Mary Aletha; *Tulsa, Okla.*
 Butcher, Clifford Finley; Severy.
 Butler, Florence Vale; Lawrence.
 Button, Dorothy Maude; Burrton.
 Calkins, Anna Lorimer; Willis.
 Calkins, Franklin Delmare; Willis.
 Campbell, Robert Finley; Meade.
 Canavan, Lila Marguerite; Lawrence.
 Carey, Walter Ray; Osage City.
 Carnie, Elizabeth Ewing; *Kansas City, Mo.*
 Carter, Millie Field; Lawrence.
 Castle, Majorie; *St. Joseph, Mo.*
 Caudill, Clvde F.; Protection.
 Chaffee, Mrytie; Marysville.
 Chambers, Adelbert R.; Tescott.
 Chambers, Helen Louise; Lawrence.
 Chappell, Frank Tilbert; *Newkirk, Okla.*
 Church, Romulus Bruce; Lawrence.
 Cissna, Arnstina; Kansas City.
 Clark, Helen Eugenia; *Kansas City, Mo.*
 Clark, William Dorman; Utica.
 Colaw, James Samuel; Petrolia.
 Conklin, Tracy R.; Abilene.
 Connolly, John Vernon; Colby.
 Cooke, Charles Harold; Wichita.
 Cooper, Lloyd Frank; Hoxie.
 Cory, Charles Henry; Parsons.
 Cox, Hubert Donald; Cedar Vale.
 Cox, Wilfred; Sharon Springs.
 Craven, Bessie Evelyn; Summerfield.
 Crawford, Lewis Nelson; Sedan.
 Crawford, Thomas Lonsden; Topeka.
 Creek, William Perry; Lawrence.
 Criley, Helen Elizabeth; *Independence, Mo.*
 Cromwell, Harry Hardin; Lawrence.
 Curl, Hobart Grant; Osborne.
 Daniell, Lola Lee; *Pensacola, Fla.*
 Darby, Raymond V.; Washington.
 Day, Opal; Wichita.
 Dean, John Sullivan; Topeka.
 Demuth, Howard B.; Ellsworth.
 Dent, Faye Marie; Oswego.
 DeWald, Martha; Russell.
 Dewey, Charles Homer; Elk City.
 DeWitt, Helen Wright; Kansas City.
 Dixon, Claude Frank; Kiowa.
 Dedderidge, Faye; White City.
 Donaldson, John Allison; Garnett.
 Dotzour, Royer Paul; McPherson.
 Drake, Gladys Edith; Fort Scott.
 Drury, Ray V.; Newton.
 Dunmire, Camilla Ruth; Lawrence.
 Dunnett, Phyllis Lucinda; Lawrence.
 Durbin, Frank Dewey; Bonner Springs.
 Dyer, Eugene Thomas; Kansas City.
 Dyer, John Albert; Kansas City.
 Easton, Charles Gerald; Winchester.
 Edgar, Lucille Anna; Lawrence.
 Eitzen, Abram Clement; Hillsboro.
 Elliott, Dampsey Walter; Lawrence.
 Elliott, Jeannette Herriott; Lawrence.
 Emmons, Fern Ora; Lawrence.
 Engel, Herman Busch; Lawrence.
 Engle, Viola; Abilene.
 Evans, Lester James; *Clovis, N. Mex.*
 Fairchild, Margaret; Hiawatha.
 Farris, Ivan Leo; Norwich.
 Fearing, Olin Kyrle; Burr Oak.
 Feierabend, Frank Leo; Atchison.
 Ferguson, Samuel Henry; Atchison.
 Fish, Lillian V.; Lawrence.
 Fletcher, Zell; Preston.
 Flint, Dorothy; Girard.
 Forbes, Helen Marguerite; Concordia.
 Foster, Fern Lucile; Achilles.
 Foster, Lewis Chandler; *Kansas City, Mo.*
 Foster, Marguerite Belle; *Kansas City, Mo.*
 Fowler, Melvin Eugene; Merriam.
 Frank, Vernon H.; Irving.
 Frankforter, Ethel May; Lawrence.
 Freese, Esther; Lawrence.
 Frick, Gage Carlin; *Kansas City, Mo.*
 Fulkerson, Katharine; Lawrence.
 Furney Eunice; Alta Vista.
 Furse, Nanne Margaret; Cimarron.
 Furse, Vera Lazelle; Cimarron.
 Garrison, Joseph Russell; Garnett.
 Gestring, Hugh Arthur; Atwood.
 Gillispie, Imogene Marion; Kansas City.
 Gillock, Frances Eugenia; Ft. Scott.
 Glascock, Calvin Carleton; St. John.
 Glenn, Ruth Pauline; Robinson.
 Goodjohn, Elizabeth Wright; Leavenworth.
 Gordon, Maybelle Inez; Lawrence.
 Gowens, Ura Lee; Haviland.
 Graham, Norruth Dilley; Hiawatha.
 Gramse, Greta Hazel; Perry.
 Green, Ethlyn; *St. Joseph, Mo.*
 Greenlees, Lois Ann; Lawrence.
 Gregory, Dwight Omar; Lawrence.
 Griffith, William Henry; Pratt.

SOPHOMORES—continued.

- Grimes, Clarence Earl; Minneapolis.
 Groh, Joseph Peter; Wathena.
 Guild, Ruth Evelyn; Topeka.
 Haines, Charles Albert; *Marshfield, Ore.*
 Haines, Howard Wright; Baxter Springs.
 Haines, Lucile Pearl; Lawrence.
 Hakan, Albert Joel; Kansas City.
 Hake, Edwin Carl; Minneapolis.
 Hale, Milford Worth; Formoso.
 Hall, Stella Gertrude; Neodesha.
 Hamilton, Shirley Gonzalez; Lawrence.
 Hangen, Eva Catherine; Wellington.
 Hangen, Herman Cecil; Wellington.
 Harkrader, Florence; Pratt.
 Harlan, Vera May; WaKeeney.
 Harper, Mabel Jane; Frankfort.
 Harrington, Roscoe Samuel; Augusta.
 Hart, George Marion; Lawrence.
 Harvey, Randal Cone; Topeka.
 Hagg, Cecil Edwards; Kansas City.
 Hawkinson, Mary; McPherson.
 Heathman, Lucy; Lawrence.
 Helwig, Ferdinand Christian; Kansas City.
 Hemphill, Raymond Porter; *Kansas City, Mo.*
 Hereford, Melvin; Marion.
 Heron, William Thomas; Burns.
 Hershey, Noah Lincoln; Abilene.
 Hess, Edith Idella; Lawrence.
 Heter, Georgia; Lawrence.
 Hildinger, Pauline Virginia; Lawrence.
 Hill, Ethel Marian; Lawrence.
 Hill, Ormond Perley; Topeka.
 Hilton, Willard Ordway; Cottonwood Falls.
 Hitch, Mary; *Guyton, Okla.*
 Hitchcock, Frances Lee; Augusta.
 Hite, W. Blaine; Cherryvale.
 Hite, Woodard Vannos; Cherryvale.
 Hobart, Harold Nelson; Lawrence.
 Hoff, Grace Elizabeth; Lawrence.
 Hohn, Nellie Doris; Maryville.
 Holloway, Richard Black; Lawrence.
 Holmes, Miriam Eva; Elmdale.
 Horr, Worthie Harold; Troy.
 Horton, Martha Ruggles; Lawrence.
 Hostetter, Marie Miller; Lawrence.
 Hovey, Jessie Lucile; Kansas City.
 Hudson, Marjorie; Fredonia.
 Hughes, Lawrence Dwight; Lawrence.
 Ingalls, Samuel Robert; Washington.
 Ingham, Florence Mae; Ft. Scott.
 Jackson, Hester King; Lincoln.
 Jacobs, Elijah Lawrence; McCune.
 Jarman, Ray Charles; *Kansas City, Mo.*
 Jenkins, Elmer Lawrence; Cherokee.
 Jones, Morris Burdette; Cedar Vale.
 Jones, Ross Donald; Lawrence.
 Jordan, Isaac Newton; Mankato.
 Jordan, Mayme Geraldine; Glasco.
 Joss, Mildred Louise; Topeka.
 Katzenberg, Salvie Helen; Kansas City.
 Kauffman, Clyde LeRoy; Abilene.
 Keck, Kenneth Fielman; *Wapello, Iowa.*
 Keeler, Guy Vernon; Scottsville.
 Keeling, Dolores B.; Ft. Scott.
 Kelly, Dorothy Lillian; Iola.
 Kennedy, Julia Alice; Ft. Scott.
 Kennedy, Leta Fern; Lawrence.
 Ketals, Marie; Lawrence.
 Kimball, Pauline; Neodesha.
 Kistler, John Joseph; Alta Vista.
 Kizler, Ida; Hillsboro.
 Kreider, Karl McKinley; Lawrence.
 Krouse, Rollo; Wheaton.
 Landon, Charles Earl; Mayetta.
 Laslett, Howard; Lawrence.
 Lawrence, Louis William; Lawrence.
 Leon, Irma Katherine; *Kansas City, Mo.*
 Leonard, Marie Louise; *Kansas City, Mo.*
 Lesh, Corinne; Arkansas City.
 Lind, Lloyd Latour; Clay Center.
 Lindley, Edna Fuller; Lawrence.
 Lindley, Georgia Elizabeth; Lawrence.
 Long, Eugene F.; Madison.
 Longenecker, Harold John; Lawrence.
 Longstreth, Guy Vernon; Colony.
 Ludeman, Frances Margaret; Anthony.
 Luman, Edmondson; Beloit.
 Luse, Elgie; Easton.
 Lutz, Elizabeth Jane; Holton.
 Lyne, James Garnett; Herington.
 Lyon, Garrett Brown; Augusta.
 Mack, Inez; Lawrence.
 Mack, Irene Esther; *Kansas City, Mo.*
 Maloy, Eva Helene; Eureka.
 Martin, Carol Lucile; Lawrence.
 Martin, Eugene Rhodes; Liberal.
 Martin, Raphael Lynn; Brookville.
 Martin, Rebecca; Garnett.
 Martin, Robert Elmer; Stafford.
 Martin, Wilfred Everette; Lawrence.
 Martling, Francis Hodgen; Kansas City.
 Mason, Edward Sagendorph; Lawrence.
 Maxwell, Uccil Seymour; Ft. Scott.
 May, Elmer Lawson; Hutchinson.
 Mee, Herbert Martin; *Okahoma City, Okla.*
 Messick, Jessie Lea; Hill City.
 Meyer, Claude Leroy; Effingham.
 Miller, Lester B.; Welda.
 Miner, Jean Walter; Burlingame.
 Minturn, Benjamin Earle; Florence.
 Mitchell, Margaret Helen; Lawrence.
 Mitchell, Samuel Eben; Lawrence.
 Montague, Josephine May; Washington.
 Montgomery, George A.; Mankato.
 Montgomery, John Alexander; Lawrence.
 Moore, Esther H.; Hutchinson.
 Moore, Maude Irene; Lawrence.
 Morgan, Louis Schubert; Arkansas City.
 Morris, William Robinson; Fall River.
 Moxley, Harry Forrest; Osage City.
 Myers, Ralph Maness; Alden.
 McAllister, Fred Lewis; Marysville.
 McAtee, Olive Viola; Blue Rapids.
 McBratnev, Edyth Mae; Centralia.
 McCall, Fanny Virginia; Hiawatha.
 McCamish, Dorothy Lee; Kansas City.
 McCandless, Orville Calnon; Wichita.
 McClung, Thomas Orlando; Jewell.
 McClure, Marv; *Kansas City, Mo.*
 McConnell, William Howard; Lawrence.
 McCreath, David Gentry; Lawrence.
 McDowell, Carroll; Arkansas City.
 McGinness, Byron Franklin; Aulne.
 McIntire, Emery James; *Kansas City, Mo.*
 McIntosh, Fred Eben; Burns.
 McMeel, Anna Elizabeth; Meade.
 McMillan, Sadie; Lawrence.
 McNalley, Anna Rose; Michigan Valley.
 McNalley, Joseph Edward; Michigan Valley.
 Naismith, Helen Caroline; Lawrence.
 Nelson, Allene Marie; Lawrence.
 Nelson, Raymond Ashley; Lawrence.
 Nixon, Louise Aldrich; Concordia.
 Nodurfrth, Lula Lucile; Lawrence.
 Nowlin, Lucile C. H.; Lawrence.
 Ogg, William Raymond; Lawrence.
 O'Keefe, Elizabeth Philomene; Newton.
 Olander, John Willard; *Kansas City, Mo.*
 Owens, Seth Jenkins; Effingham.
 Palmer, Beatrice Ventura; Hutchinson.
 Palmer, Everett T.; Jewell.
 Parkinson, Marina Jeanette; Ft. Scott.
 Patterson, Elsie Fay; Abilene.
 Pearson, Warren Prescott; White City.

SOPHOMORES—concluded.

Peek, Milton Leroy; Arkansas City.
 Perkins, Marguerite Aileen; Eudora.
 Perkins, Oscar Floyd; Meade.
 Peters, Hazel Arissa; Lawrence.
 Peters, Shirley Wilmont; Lawrence.
 Piehler, Elmer; Alden.
 Piper, Caroline Hough; Irving.
 Plank, William Ewart; Lawrence.
 Potter, Clarence Earl; McCune.
 Potucek, Louis Eugene; Portland.
 Pratt, Joe J.; Lawrence.
 Preble, Fred Clarence; Hutchinson.
 Preder, Vera Musetta; Atwood.
 Pumroy, Lorna Irene; *Pawnee, Okla.*
 Ramsey, Mabel Ester; Garnett.
 Rannie, Paul Rimal; Lawrence.
 Reed, Cameron Groh; *Kansas City, Mo.*
 Reinhart, James A.; Parsons.
 Reitz, Harlie Stephen; Morrill.
 Reitzel, Dean Heaton; Lawrence.
 Reynolds, Olive; Holton.
 Rice, Gladys; Lawrence.
 Richardson, Hermania M.; Lawrence.
 Richardson, Homer Henry; Savonburg.
 Riddle, Helen; Marion.
 Rinker, Harry Monroe; WaKeeney.
 Ritter, Cecil Henry; Clifton.
 Robinson, Eva; Minneapolis.
 Robinson, Harold Morley; Blue Rapids.
 Robinson, Harry L.; Salina.
 Robson, William Bonjour; Wamego.
 Roby, Marjory; Topeka.
 Rogers, Whitson Golton; Wellington.
 Roop, Charles William; Abilene.
 Rorabaugh, Evelyn; Wichita.
 Ross, Carl; Kansas City.
 Rouse, Ruth Mary; Wichita.
 Rudolph, Ruth Wilma; Lawrence.
 Russell, Roy Dean; Great Bend.
 Sandberg, Dorothy May; *Kansas City, Mo.*
 Schenk, Mary Lillian; *Spearfish, S. D.*
 Schenck, Mina Margaret; Burlingame.
 Schnitzler, Fritz William; Wichita.
 Schoenfeld, Hazel Aleata; *Bartlesville, Okla.*
 Scoby, Otis Charles; Fairview.
 Scott, James Armstrong; Kansas City.
 Segelbaum, Rose Bertha; Kansas City.
 Selig, August Lewis; Lawrence.
 Shafer, Vesta; Fredonia.
 Sheets, Jane; Lawrence.
 Shelley, Foster Leonard.
 Shepherd, Gertrude; Kansas City.
 Shogrin, Arthur Clifford; Fowler.
 Sibbett, Charlie Roger; Protection.
 Simon, Carl Ludwig; Preston.
 Sitzler, Emma Lois; Lawrence.
 Sloop, Ernest Wesley; Lyndon.
 Smith, Bert C.; *Pawnee Rock.*
 Smith, Dwight Melvin; Wichita.
 Smith, Hazel Lucile; Lawrence.
 Smith, Mary; Abilene.
 Smith, Nellie Virginia; Lawrence.
 Smith, Ralph Alexander; Garnett.
 Smith, Vernon David; Lawrence.
 Smithmeyer, Matilda Emma; Lawrence.
 Spook, Albert Floyd; Sterling.
 Solt, Orva Esther; Waterville.
 Sopher, Maude Myrtle; Topeka.
 Sowers, Marguerite Anna; Bonner Springs.
 Spencer, Lucene Allen; Iola.
 Starrett, Ellis Lanbengayer; Norton.
 Statton, Dot Emerson; Lexington.
 Steckel, Marie; Woodbine.
 Stephenson, Carol Dell; Burlington.
 Stephenson, Julian Rawlings; Pleasanton.
 Stevenson, Ferne; Lawrence.
 Stewart, Vera Florence; Burr Oak.
 Strange, Vivian Naomi; Perry.
 Swanson, Caleb Vincent; Lindsborg.
 Swarner, Nelsie Ray; Coldwater.
 Swenson, Gilbert Oscar; Leonardville.
 Taylor, Bradley R.; Salina.
 Taylor, James Ross; Lawrence.
 Taylor, Mildred Aileen; *Kansas City, Mo.*
 Teeter, Clifford Loraine; Dodge City.
 Terrill, Harold James; Robinson.
 Thiessen, Edward Herman; Beloit.
 Thomas, Charles Leonard; Lawrence.
 Thompson, Edward Walter; Topeka.
 Transue, Elsie Belle; Summerfield.
 Traul, Ruth Irene; LaCygne.
 Troup, Abram; Logan.
 Tucker, Jack; Lawrence.
 Tucker, LeVerne; Cawker City.
 Underwood, Fay; Lawrence.
 VanBrunt, Lowell D.; Ft. Scott.
 VanVelzer, Harry Leland; Ft. Scott.
 Varner, Luella; Iola.
 Venning, Albert Jacob; Grenola.
 Vernson, Harry Walter; Blue Rapids.
 Voorhees, Claude Harold; Miltonvale.
 Wagstaff, Helen Elizabeth; Lawrence.
 Waldie, Eva May; Lawrence.
 Walker, Margaret Louise; Salina.
 Walling, Lulu Grace; Lawrence.
 Walz, Thomas Julius; Kansas City.
 Washington, Herschel Lawrence; Leoti.
 Wear, Millard Price; Topeka.
 Webb, Ora Louella; Lawrence.
 Weissenborn, Walter; Kansas City.
 Welsh, Floyd Elnow; Lawrence.
 Whitecher, Edith Frances; Concordia.
 Whitehurst, Terrell; Kansas City.
 Wilbur, Clifford Henry; Lawrence.
 Willems, Leonard Carnody; Lansing.
 Williams, Anton I.; Lawrence.
 Williams, Frederic Calvin; *Canon City, Colo.*
 Williams, Harriett Leah; Preston.
 Wilson, Alexander R.; Meade.
 Wilson, Allen Ditmars; Chanute.
 Winchester, James A.; Hays.
 Wooddell, Helen Boyd; Nickerson.
 Woods, Ruth Sarah; Burden.
 Woodward, Don Edward; Cheney.
 Woody, Warren Vernon; Barnard.
 Woolsey, Darlene Elizabeth; Lawrence.
 Wullenwaber, Irma Katherine; Harper.
 Yost, John Bond; Vesper.
 Young, Margaret; Fredonia.
 Young, Percy; Lawrence.
 Ziegler, Frederick McClain; Medicine Lodge.

SOPHOMORES, 439.

FRESHMEN.

Adams, Mark Hannah; Liberal.
 Ahrenkiel, Grace Marie; *Vail, Ia.*
 Akers, Merton T.; Lawrence.
 Alexander, Jennie Angeline; Garnett.
 Alexander, Maye Marie; Oskaloosa.
 Allen, Earline; LaCygne.
 Ames, Clarinda Josephine; Concordia.
 Amis, John C.; Lebanon.
 Amy, Marie Frances; Minneola.
 Anderson, Arthur Sam; Lawrence.
 Anderson, Ila Edna Louise; Lawrence.
 Anderson, Mary Margaurite; Gas.
 Anderson, Tyson Virgil; Partridge.
 Arnold, Cora Alice; Ottawa.
 Arnold, Marion E.; Emporia.
 Atchison, Edna Florence; Independence.
 Atwood, Esther; Caney.
 Austin, Catherine; Cottonwood Falls.

FRESHMEN—continued.

- Austin, Herman Launcelot; Kansas City.
 Auswald, Elizabeth Frances; Kansas City.
 Axel, Leon Aaron; *Joplin, Mo.*
 Ayers, Glen Zella; Alma.
 Ayers, Xenia Vernon; Alma.
 Babcock, Marie Pauline; Wichita.
 Bagley, Harriet Robson; Melbourne.
 Bahmaier, George Fred; Leocompton.
 Bailey, Myrtle Kendall; Garden City.
 Baker, Crawford James; Kansas City.
 Baker, Fressa Sample; Torondo.
 Baldwin, Katrina; *Kansas City, Mo.*
 Banker, Glenn Victor; Russell.
 Banks, Mary Esley; Gas.
 Barbee, Frank Eugene; Paola.
 Barnard, Edith; Madison.
 Barrett, James Caldwell; Concordia.
 Bartholomew, Adelaide Ruth; Jewell.
 Bartley, Wanda Marie; Florence.
 Baskett, Roy F.; Holton.
 Baum, Ernest Eldon; Kansas City.
 Bauman, Edwin Rudolph; Wellington.
 Beagle, Hannah Martha; Alta Vista.
 Bechtel, Isabel Frances; Liberty.
 Beebe, Georgia Alice; Burns.
 Beeler, Nellie Eleanora; Mankato.
 Beery, Byron Ashby; Lawrence.
 Bell, Rachel Elizabeth; White Cloud.
 Bender, Helen Frances; *Oklahoma City, Okla.*
 Bennett, Arthur Harry; Topeka.
 Bennett, Clarence Griffith; Kansas City.
 Bennett, Kenneth Otto; Lovewell.
 Berlin, Brooks; Sedan.
 Bernard, Clarence Rolla; Lawrence.
 Bernhard, Alice Virginia; Lawrence.
 Bernstein, Julius; *Newark, N. J.*
 Bidwell, George Henry; Kinsley.
 Bierer, Bion Burton; Hiawatha.
 Biggs, Lloyd Glen; Potwin.
 Binford, John Allen; Wellsville.
 Birch, Albert Ellis; Lawrence.
 Bird, Edward Homer; *Kansas City, Mo.*
 Bishop, Howard Leckron; Lawrence.
 Blakeley, Victor Kenney; Topeka.
 Blakeslee, Elizabeth; *Kansas City, Mo.*
 Bleam, William Frederick; Bloomington.
 Block, Clarence Isaac; Moundridge.
 Boone, George Franklin; Junction City.
 Bottomly, Ruth Esther; Cedar.
 Boys, Mason Bowden; Independence.
 Bozell, Goldie Vi Visu; Cherryvale.
 Bradstreet, Edward David; Dighton.
 Braly, Homer Benjamin; *Nardin, Okla.*
 Bramwell, William Verne; Pretty Prairie.
 Bredine, Lester Fredolph; Mound Valley.
 Bressen, Carl Robert; Sebetha.
 Broeker, Louise Marie; Lawrence.
 Bromwell, Reah; *Kansas City, Mo.*
 Brown, Bessie Alice; Englewood.
 Brown, Cecil Bernice; Lawrence.
 Brown, Dudley Buck; Halstead.
 Brown, George Harold; Holton.
 Brown, Helen Margaret; *Joplin, Mo.*
 Brown, Irwin Schilling; Lawrence.
 Brown, Margaret Elizabeth; Minneapolis.
 Brown, Marguerite Esther; Lawrence.
 Brown, Marian Cecil; Argentine.
 Brown, Max L.; Lawrence.
 Brown, Roscoe Irving; Lawrence.
 Browne, Evan H.; Kansas City.
 Brownlee, Muriel Alberta; Salina.
 Bruce, Elsie Francis; Pawnee Rock.
 Brush, Harriett Elizabeth; Lawrence.
 Buchanan, Charles Albert; Liberal.
 Burch, Edna Louise; Carthage.
 Burrough, Victoria Alexandrina; *Kansas City.*
 Burwell, Keene C.; *Oklahoma City, Okla.*
 Butcher, Fred D.; Lawrence.
 Butcher, Seldon D.; Lawrence.
 Butcher, Winifred; Cimarron.
 Caffrey, Helen June; Mt. Hope.
 Campbell, Carl Benton; Iola.
 Campbell, Katherine; *Ann Arbor, Mich.*
 Campbell, Lida; Meade.
 Carder, Leone; Lawrence.
 Carter, Jean Cranston; Lawrence.
 Case, Vivian Clyde; Alta Vista.
 Casford, Ralph Shelton; Bird City.
 Champlin, Benjamin Dwight; Canton.
 Chandler, James Wesley; Rosedale.
 Chapman, Lloyd; McLouth.
 Chapman, Lorette; Kansas City.
 Chappell, Glen Harold; *Newkirk, Okla.*
 Cherry, Henry Lee; Lebanon.
 Chipman, Floyd Alexander; Stockton.
 Christman, Albert Joseph; Wichita.
 Church, Mary Lucinda; Lawrence.
 Cissell, Merrill Aikman; Chanute.
 Clark, Antoinette Cassidy; Topeka.
 Clark, Ernest Harry; *Kansas City, Mo.*
 Clark, Ethel C.; Mankato.
 Clark, Kenneth Hadden; Lawrence.
 Clark, L. Hasseltine; *Kansas City, Mo.*
 Clevenger, Louis Edgar; Concordia.
 Clift, Merl Cecil; Lawrence.
 Cochran, Burt Emerson; Wichita.
 Coe, Auburn Spurgeon; Huron.
 Coen, James Randolph; St. John.
 Coffey, Ewal; Kiowa.
 Coffin, Jean Eleanor; Lawrence.
 Collins, Byron Taylor; Seneca.
 Commons, Faye; Altoona.
 Compton, Allen Trimble; *Kansas City, Mo.*
 Convis, Dallas Laverne; Burr Oak.
 Cope, Hazel Vivance; *Kansas City, Mo.*
 Copeland, LeRoy N.; Lawrence.
 Cottrell, Lillian Fern; Irving.
 Cottrell, Ray Noel; Chanute.
 Couchman, Alma Rie; Garden City.
 Couk, Raymo.d Arthur; Wanneta.
 Craig, Alma Gertrude; Wichita.
 Craig, Jessie; Osage City.
 Craig, Jessie Emma; Nortonville.
 Crawford, Edward Taylor; Coldwater.
 Crawford, James Ellsworth; Coldwater.
 Crim, Adele Montgomery; Lawrence.
 Crim, Virginia Dickinson; Lawrence.
 Crowder, Leslie Earl; Buffville.
 Cubbison, James Ken; Kansas City.
 Cummings, Jack; Barnard.
 Curtis, Charles Havelock; Marion.
 Cushing, Clifford Merle; Downs.
 Custer, Cecil Cicero; Cedarvale.
 Cutter, Irene Elizabeth; Lawrence.
 Cade, Emil Bryan; Nickerson.
 Dail, Leon Keith; Lawrence.
 Daily, Christopher Edmund; Scottsville.
 Daniels, Guy; Pawnee Rock.
 Daniels, Joe Edward; Paola.
 Daugherty, George William; Lawrence.
 Davis, Chauncey Milton; Lawrence.
 Davis, Emanuel; Lawrence.
 Davis, Kathryn Laura; *Kansas City, Mo.*
 Davis, Warren Brayton; Cottonwood Falls.
 Davis, William Ray; Verdi.
 Davison, Harold Ralph; Larned.
 Davison, William McKinley; St. John.
 Dawson, Dorothy; Great Bend.
 Deewall, Lorin William; Argonia.
 DeForrest, Carol Holmes; Wetmore.

FRESHMEN—continued.

- DeGroat, Bruce; *Salamanca, N. Y.*
 Derge, Dorothy; Lebanon.
 Derge, Dorothy; Lebanon.
 Dewey, Thomas E.; Topeka.
 DeWolf, Henry Franklin; Garnett.
 Dick, Adelaide B.; Axtell.
 Dienst, Barbara Wilhelmina; Coffeyville.
 Dienst, Mary Eleanor; Coffeyville.
 Dietrich, Carlton Clyde; Miltonvale.
 Dillon, Dale Crowl; Coffeyville.
 Dimond, Eva Moore; Wichita.
 Dodderidge, Philip William; White City.
 Dorsett, Blanche Estelle; Spearville.
 Dorsett, Charlotte Elizabeth; Spearville.
 Dosbaugh, William Mortimer; Cedar Vale.
 Dresslar, Elmer; Mankato.
 Dresslar, Frank Arthur; Mankato.
 Duff, Louis Dunlap; Horton.
 Dunn, Gretchen; *Bartlesville, Okla.*
 Durbin, Earle LeRoy; Lyndon.
 Duttweiler, Mattie May; Hartford.
 Earlenbaugh, Lawrence E.; Cladin.
 Eastman, Cora Grace; Lawrence.
 Egbert, Ward Bertrand; Cimarron.
 Elliott, Maude Herriott; Lawrence.
 Ellsworth, Willoughby Fred; Mound City.
 Eltzholtz, Arthur William; Chanute.
 Emerson, Mary Elizabeth; Great Bend.
 Epley, Ida Gladys; Lawrence.
 Eppinger, Isaac Harry; Holton.
 Etling, John August; Belpre.
 Evans, Amanda Elizabeth; Lawrence.
 Evans, Carlos William; Tonganoxie.
 Evans, Nellie Reese; Lawrence.
 Evans, Paul; Lawrence.
 Evans, Russell; *Kansas City, Mo.*
 Evans, Wade Hampton; WaKeeney.
 Ewart, John Lewis; Minneapolis.
 Ewing, Ruth Evelyn; Kansas City.
 Falls, Humphrey Milton; Lawrence.
 Fallis, Mabel Faye; Dighton.
 Faragher, Dorothy Delphine; Sabetha.
 Farrell, Ray Christopher; Pratt.
 Finch, Mateel; Lawrence.
 Fink, Louis Osterrath; Lawrence.
 Fitzpatrick, James Earl; Lawrence.
 Fitzsimmons, Harry Ormond; Cunningham.
 Fixley, Everett Hayes; Parsons.
 Fleenor, Harry Miles; Lecompton.
 Fleming, Bruce Aldrich; Nickerson.
 Floyd, Dean Lewis; Sedan.
 Fogarty, Angela Julia; Lawrence.
 Foster, Jessie Ruth; Achilles.
 Foster, Susan Estella; Sedgwick.
 Fowden, Irene Kemble; *Dewey, Okla.*
 Fowler, Earl Haburn; Merriam.
 Francisco, Clell Raymond; Lawrence.
 Frazier, Irma Gilberta; Kansas City.
 Frisbie, Edith Adelaide; Bonner Springs.
 Fugate, Annette Keller; Lawrence.
 Fuhr, Francis E.; Meade.
 Gage, Walter Reed; Minneapolis.
 Gardner, Don; Winfield.
 Gardner, Katharine; *Ft. Smith, Ark.*
 Garman, Mary Angela; *Pawhuska, Okla.*
 Garrett, Annette Marie; Lawrence.
 Garrett, Mayme Elizabeth; *Kansas City, Mo.*
 Gaumer, Lucile Viridilla; Lawrence.
 Gear, Mertha Vivian; Buffalo.
 Gensler, Jesse Convin; El Dorado.
 Gerhold, Ella Mae; Greeley.
 Gibbons, Clara Marie; Topeka.
 Gibson, Marjory Josephine; WaKeeney.
 Gibson, Philip Charles; Kansas City.
 Gibson, Ruth Muriel; Arrington.
 Gilkerson, Murray Mack; Burlingame.
 Gilmore, Mildred Lucile; Lawrence.
 Glascoe, Maude Eleanor; Lawrence.
 Glenn, Dayton Furse; Robinson.
 Goff, Nancy Moody; Lawrence.
 Goodjohn, Mark D.; Leavenworth.
 Goodwin, Harold Wilford; Woodston.
 Gorrill, Galen Alexis; Lawrence.
 Goss, Clark Cleo; Harper.
 Gould, Edythe Esther; Irving.
 Graeber, Arling; Lawrence.
 Graham, Hilton Wescott; Hiawatha.
 Grant, Harold B.; Kingman.
 Graves, Ida Mabel; *Oklahoma City, Okla.*
 Gray, George; Kansas City.
 Gray, Glenn Neil; Protection.
 Gray, Marion; Salina.
 Greene, Grace M.; Lawrence.
 Gregory, Harold Van Voorhis; Coffeyville.
 Gregory, William Simpson; *Kansas City, Mo.*
 Gress, Roy Ketcham; Lecompton.
 Griffiths, Mamie; Lawrence.
 Grossenbacher, Margaret; Bern.
 Haas, Kendall Milton; Holton.
 Hackman, Lucy McFarland; Lawrence.
 Hackman, Mary McFarland; Lawrence.
 Hagen, Beatrice Liberty; Ellinwood.
 Hagen, Ella Jane; Ellinwood.
 Hagen, Maude Barbara; Ellinwood.
 Hall, Selden Glenn; Bonner Springs.
 Hallmann, Herbert William; Hudson.
 Hamilton, Harold Raymond; Norton.
 Hammat, Rilla Virginia; Pratt.
 Hampson, Dora Lucile; Fredonia.
 Hangen, Luther Hale; Wellington.
 Hanna, Marcus A.; Kansas City.
 Hanson, William Dewey; Osage City.
 Hardman, Dwight Harrison; Phillipsburg.
 Hargis, Mary Elizabeth; Fowler.
 Harms, Leon Herman; Hillsboro.
 Harper, Howard Kimball; *Hobart, Okla.*
 Harrison, William Henry; Downs.
 Hart, Helen; Ashland.
 Hart, Helen; Bonner Springs.
 Hartley, Robert Adair; Lawrence.
 Hartman, Isadore; *Brooklyn, N. Y.*
 Harvey, Tracy Uvia; Eudora.
 Haskell, John Dennis; Abilene.
 Haughawont, Alcah Howard; Onaga.
 Hawkins, Mary Beatrice; *Jasper, Mo.*
 Haworth, Margaret Josephine; Lawrence.
 Hayden, James Richard; *Lexington, Mo.*
 Hayes, Philip Cadet; Iola.
 Heffner, Paul; *Chickasha, Okla.*
 Heim, George Frederick; Ellinwood.
 Helmer, Selma Velma; Lawrence.
 Helmers, William Henry; Leavenworth.
 Hembrow, William James; White City.
 Herbig, Henry Markel; Fairport.
 Herold, Fred J.; Kansas City.
 Herr, Opal Angeline; Medicine Lodge.
 Hess, Benjamin Winfield; Lawrence.
 Hill, Aeo; Neodesha.
 Hill, Clair Elwood; Washington.
 Hilton, David Lee; Strong City.
 Hilton, Joseph Howard; Cottonwood Falls.
 Hindman, Albert Henry; Lawrence.
 Hitchens, Edna Pauline; Burlington.
 Hockenhull, Floyd Langley; Lawrence.
 Hogue, Hobart Anderson; Olathe.
 Holland, Benjamin Leroy; Lawrence.
 Holmes, Myra; Wetmore.
 Hoover, William Harold; Osborne.
 Hopkins, Vivian Erdene; Kansas City.
 Howden, Rollo Ralph; *Skidmore, Mo.*
 Howland, Ralph J.; Ludell.

FRESHMEN—*continued.*

- Huff, James Wellman; Downs.
 Hunter, Geneva Campbell; Lawrence.
 Huxman, Paul Henry; Pretty Prairie.
 Idol, Mildred; Robinson.
 Ingram, Irwin Clifford; Oswego.
 Jackman, Ruth; Minneapolis.
 Jacks, Eva; Wichita.
 Jackson, Bronce; Barnard.
 Jackson, Helen Elizabeth; Kansas City.
 Jackson, Lucinda Violette; Lawrence.
 Jarvis, Robert Louis; Kansas City.
 Jenkins, Fred B.; *Kansas City, Mo.*
 Jewett, Isabel Irene; Waverly.
 Johnson, Dean Leigh; Coffeyville.
 Johnson, Delilah Mae; Beloit.
 Johnson, Dorothy Elizabeth; Beloit.
 Johnson, Esther Margaret; Emporia.
 Johnson, Lois Frances; Lawrence.
 Johnson, Myra Edythe; Neodesha.
 Johnson, Naomi Susan; Kansas City.
 Johnson, Sherralt Marcus; Council Grove.
 Jones, Ben Rodger; Kansas City.
 Jones, Goldia; Fredonia.
 Jones, Laurel Edgar; Larned.
 Jones, Margaret; Leavenworth.
 Jones, Paul Robert; Council Grove.
 Jordan, Gladys Dolores; Glasco.
 Joslin, Donald Edward; Hugoton.
 Joslin, Leeman Charles; Bavaria.
 Joslin, Robert William; Hugoton.
 Kagi, Elva Filma; Lawrence.
 Kapfer, Edgar William; Colby.
 Kaselack, Sidney Francis; Lawrence.
 Keeler, Lora Annie; Lawrence.
 Keeler, Walter James; Lawrence.
 Keeven, John Patrick; Wathena.
 Keith, Esther Mary; *Gooding, Idaho.*
 Keeley, George Lowell; White Cloud.
 Kelsey, Ruth; Lawrence.
 Kendall, Russel Rex; Tonganoxie.
 Kidwell, Zolan Lavonne; Lawrence.
 Kiefer, Everett Duane; Lawrence.
 Kimmel, Dean; Robinson.
 King, Alta Reid; Nickerson.
 King, Frederic Louis; Hiawatha.
 Kinney, Agatha Pearl; *Muskogee, Okla.*
 Kirkpatrick, Clifton; Kansas City.
 Kiser, Laurenia Elynor; Lawrence.
 Klapmeyer, Florence; *Kansas City, Mo.*
 Klima, Leo Theodore; *Medford, Okla.*
 Knight, Durell Keeling; Kansas City.
 Knight, James Madison; Richmond.
 Knoles, James Lyle; Kingman.
 Kohman, Frances Miriam; Dillon.
 Kugler, Ernest William; Abilene.
 Kunkle, Geneva Mildred; Lawrence.
 Kunkle, Gladys Irene; Lawrence.
 Lacy, Blanche Mary; Lawrence.
 Lahey, Arthur Easton; Moscow.
 Laing, Margaret Louise; Russell.
 Lamb, Edna Raymond; Concordia.
 Landon, Ira; Mayetta.
 Larson, Mary Elizabeth; Assaria.
 Lashbrook, Robert Charles; Bonner Springs.
 Lashmet, Floyd Heaton; Lawrence.
 Lengemann, William Theodore; *Kansas City, Mo.*
 Levin, Alfred Benjamin; *Joplin, Mo.*
 Levite, Isadore Bernard; Wichita.
 Lichty, Lewis D.; Jewell.
 Little, Forest Lee; Rosedale.
 Liggett, Winfield Freeman; Kansas City.
 Lillis, Charles Clark; Holliday.
 Lodge, Julia Margaret; Kansas City.
 Logan, Albert Willard; Lebanon.
 Lonborg, Arthur C.; Horton.
 Lovings, Doris Belma; Kansas City.
 Lundblade, Leon Williams; Jamestown.
 Lupfer, Ralph Hamilton; Garfield.
 Luper, David Warren; Lawrence.
 Lupton, Frances Louise; Nickerson.
 Lynch, Cora Elizabeth; *Sweet Springs, Mo.*
 Lynn, Floyd Jensen; Neosho Falls.
 Lyon, Danbridge; Augusta.
 MacClement, Zwingle; Olathe.
 MacGregor, Gladys Margaret; Medicine Lodge.
 Macy, Mary Ella; Woodston.
 Madaris, Hobart; Lawrence.
 Madison, Marguerite; Dodge City.
 Magee, Russell Ray; Lawrence.
 Magers, Henry Brady; Winchester.
 Malott, Deane Waldo; Abilene.
 Mandeville, Frank P.; Kingman.
 Markley, Elmer C.; Atlanta.
 Marshall, Alpheus Arthur; Leavenworth.
 Marshall, Grace; Ft. Scott.
 Marshall, Harold Edward; Lawrence.
 Marshall, Vivian; Leon.
 Martin, Hazel Iva; Lawrence.
 Martin, Helen Marie; Kansas City.
 Mason, Allen Atchison; Beloit.
 Mason, Helen Louise; *Kansas City, Mo.*
 Massey, Addison Richard; Horton.
 Mather, Edward; Centralia.
 Mathews, Dewey Lee; Guymon.
 Mathews, John Andrew; Kansas City.
 Matthews, David Walton; Boicourt.
 Matthews, Violet Eugenia; Topeka.
 Medill, George Tabor; Leavenworth.
 Meisinger, Azel La Verne; Webber.
 Melville, Marguerite Vera; Eudora.
 Melvin, George Kimball; Lawrence.
 Melvin, Miriam Virginia; Lawrence.
 Messing, Alma; Ashland.
 Miller, Howard Leslie; Chanute.
 Miller, Lucile Annie; McPherson.
 Miller, Mary Louisa; Iola.
 Miller, Maximilian Alexander; Onaga.
 Miller, Mildred; *Kansas City, Mo.*
 Miller, Russell Dierolf; Burden.
 Miller, Virgie Birdie; Lawrence.
 Millsbaugh, William McKinley; Lawrence.
 Milner, John M.; Kansas City.
 Minger, Ethel Louise; Bern.
 Mitchell, Vernal Clyde; Ashland.
 Monteith, John Nelson; *Kansas City, Mo.*
 Moore, Elmina Myrtle; Lawrence.
 Morgan, Rhea E.; Lawrence.
 Morrison, Charlotte Mauree; Lawrence.
 Morton, Lloyd Sherman; Beverly.
 Mowrer, Loren Edgar; Lost Springs.
 Mueller, Ralph Edward; Kansas City.
 Mull, Rieta Ellenor; Lawrence.
 Murphy, Albert P.; Harper.
 Murphy, Alice Elizabeth; Lawrence.
 Murphy, Paul Carter; Tonganoxie.
 Musson, Edwin Harrington; Norborne.
 McBratney, Nellie Evelyn; Centralia.
 McBride, Edna; Lawrence.
 McCasland, Paul Ingram; Ashland.
 McClure, Edna Fouts; Arkansas City.
 McCurry, John; Peru.
 McDowell, Avery Scott; Colony.
 McGrati, Frank; Gardner.
 McHale, Cecil; Kansas City.
 McIntire, George Franklin; Wichita.
 McKee, Gordon Edward; Lawrence.
 McKibbin, Harry Clinton; *Kansas City, Mo.*
 McKinney, Earl Bradley; Iola.
 McKinney, Leeta Blanche; Howard.
 McMullen, Herman Ray; *Billings, Okla.*

FRESHMEN—continued.

- McPherson**, Hobart Mervin; Lawrence.
McPherson, William Lindsay; Wichita.
McShea, Gladys Eleanor; Lawrence.
 Needham, Dollie; Lane.
 Neighbors, Charles D.; Waverly.
 Nelson, Allene; Lawrence.
 Newsome, Ruth Margaret; Tonganoxie.
 Newton, Pearl Viviette; *St. Joseph, Mo.*
 Nichols, Lois Eva; Pawnee Rock.
 Noah, Lucile Allen; Hutchinson.
 Nudson, Uri Sheridan; Garrison.
 Nutting, William Dean; Russell.
 O'Brien, Elizabeth Delmarr; Lawrence.
 Ogelvie, Rial Richardson; Burr Oak.
 Olliver, Myler Dono; Iola.
 Orelup, Katherine Elizabeth; Lawrence.
 Orr, Francis Currie; *Kansas City, Mo.*
 Owen, William Byron; *Skidmore, Mo.*
 Oyster, Frank Alexander; Paola.
 Palmer, Cyril Linton; Waterville.
 Palmer, Harold William; Greeley.
 Park, Dean V.; Olathe.
 Parker, Knowlton; Robinson.
 Parnham, Joseph Clark; *Kansas City, Mo.*
 Patterson, Blanche Lyndell; Lawrence.
 Patton, Frances; Lawrence.
 Paul, Neil Archie; Randall.
 Peacock, Samuel Floyd; Stafford.
 Pearson, Lydia Christin; Courtland.
 Peck, Victor Hugo; Kingman.
 Pence, Willard Graham; Dunavant.
 Penwell, George Harvey; Larned.
 Perkins, Alice Louise; *Kansas City.*
 Perkins, Alice Minerva; Howard.
 Perry, William Leslie; Bronson.
 Pickard, Irene; Lawrence.
 Pile, Rilla; Parsons.
 Pinaire, Edward Ralston; *New Albany, Ind.*
 Pittman, Clara Amanda; *Hooker, Okla.*
 Potter, Bruce Boyd; Garnett.
 Powers, Chalton Ayers; Topeka.
 Price, Geraldine; Greensburg.
 Pulliam, Paul Emmett; Lyons.
 Putnam, Mark Leander; Lawrence.
 Pyle, Mary Llewellyn; Lawrence.
 Raffety, Charles Edward; Sylvan Grove.
 Rainey, Frances Lenore; *Pueblo, Colo.*
 Randall, Richard Bryant; Lawrence.
 Rankin, Zella Margaret; *Albuquerque, N. Mex.*
 Ransom, Turner Payne; *Kansas City.*
 Ray, Hazel Marie; Parsons.
 Read, Joseph Glenn; Coffeyville.
 Reed, Francis Santry; Newton.
 Reeves, Lucille Marjorie; Dodge City.
 Reinert, Henry August; Riverside.
 Reinisch, Marguerite; Lawrence.
 Remely, Royal McClellan; Glasco.
 Remick, Geneva; Hoisington.
 Renner, Marion John; Lawrence.
 Reno, Flavel Ellaine; Tonganoxie.
 Rewerts, Fred Carl; Garden City.
 Rhine, Mary Evelyn; Washington.
 Rich, Horace Hakeo; Coldwater.
 Richards, Edward Watterson; *Bishop, Calif.*
 Richardson, Georgiana; Lawrence.
 Riggs, Clara Harriett; Emporia.
 Riggs, Hazel May; Lawrence.
 Riley, Martha; Lawrence.
 Riley, Ray Jeannette; Lawrence.
 Ritchey, Howard R.; Iola.
 Robb, Helen Irene; Chapman.
 Roberts, Edna Lucile; Lawrence.
 Roberts, Richard Griffith; Lyndon.
 Robertson, Laura Purcell; *Kansas City, Mo.*
 Robinson, James; Florence.
- Rodkey, Ralph Darwin; Blue Rapids.
 Roesler, Frances Viola; Hoisington.
 Rogers, Adolphice Garnett; Coffeyville.
 Roles, Edith Marion; *Kansas City.*
 Rosenbloom, Zolon; Wichita.
 Ross, Floyd Willis; Sterling.
 Rourke, George W.; Topeka.
 Roush, Hoyt Leon; Jewell.
 Runkle, Etta Louise; Leavenworth.
 Runnion, Rutherford Ray; Arcadia.
 Runyon, Guy; Wichita.
 Rust, Boyd Irvin; Washington.
 Rustenbach, Fred; Fredonia.
 Rutherford, Paul Judson; Wellington.
 Ryan, Clarence Jay; Halstead.
 Ryan, Ernest Aloysius; Girard.
 Ryan, Mildred Temple; Liberal.
 Ryerson, Lucille Varian; *Newark, N. J.*
 Sage, Irving; Alma.
 Sage, Ruth Agnes; Topeka.
 Sallee, Flora-Myrtle; Hutchinson.
 Samson, Mary Henrietta; Topeka.
 Sanders, Aileen Isabel; Hall's Summit.
 Sanderson, Leafy Mary; Lawrence.
 Sawyer, Maren Berdine; *Kansas City, Mo.*
 Scanland, Granville Elmer; Randall.
 Schindler, Milton Ernest; Valley Falls.
 Schirk, Rudolph Rhea; Pittsburg.
 Schmitt, Helen Crandell; Jewell.
 Schnebly, Joseph George; Pittsburg.
 Schoeppel, Andrew Frank; Ransom.
 Schumann, Margaretha; Lawrence.
 Schwartzkopf, Edward A.; Bison.
 Schwarz, Joseph J.; *Kansas City, Mo.*
 Schwinn, Mildred Alfred; Wellington.
 Schofield, Margaret; Beloit.
 Scott, Faye; Madison.
 Searle, Genevieve; Oskaloosa.
 Sentney, Charles Ralph; Hutchinson.
 Sevilla, Pedro; *Honduras, C. A.*
 Sharp, Frances Meriam; Neodesha.
 Sharpe, Burness Ivan; Axtell.
 Shelton, Edgar Palmer; Independence.
 Sheperd, Harry Welker; Hutchinson.
 Shephard, Jane Crosby; *Dewey, Okla.*
 Sherwood, William Jesse; *St. Joseph, Mo.*
 Shopstall, Charles K.; *Kansas City.*
 Shores, Harold Porter; Burr Oak.
 Simon, Loren Dale; Seneca.
 Simonds, Vivian Mildred; Garden City.
 Sinner, Carl D.; Cherryvale.
 Slawson, Charles Julius; Girard.
 Slawson, John; Minneapolis.
 Slonaker, John Orin; Lawrence.
 Sloop, Rollin Alfred; Lyndon.
 Smith, Elbert Francis; Ellinwood.
 Smith, Elizabeth Merion; Independence.
 Smith, Howard Douglas; Wichita.
 Smith, Jesse Herbert; Chanute.
 Smith, Leslie Franklin; Vermilion.
 Smith, Mary Lucile; *Kansas City.*
 Smith, Oden W.; Garnett.
 Smith, Xenophon Palmer; *Kansas City, Mo.*
 Smith, Zuma Zeda; *Kansas City.*
 Snyder, Ivan Virgil; Norton.
 Soxman, Lee Forest; Lawrence.
 Spake, Julian Mary; *Kansas City.*
 Spence, Percival William; Valley Falls.
 Spencer, Harold Hughes; Pittsburg.
 Spencer, Jess Ella; Fredonia.
 Spencer, Merrill; Great Bend.
 Sponsler, Gertrude; Hutchinson.
 Sprecher, Chloe Elsie; Rosalia.
 Spresser, Joseph William; Dresden.
 Standly, Harold Griffin; *LaCade, Mo.*
 Stanley, Arnold Archibald; Lawrence.
 Stanley, Blanche Elizabeth; *Oklahoma, Okla.*

FRESHMEN—concluded.

Stephens, Russell Lee; Bethel.
 Sterling, Pauline; Lawrence.
 Stevens, Harry Leonard; Hutchinson.
 Stevenson, Charles Page; Oberlin.
 Stevenson, Wayne Bernice; Lawrence.
 Stewart, Oliver James; Wathena.
 Stillwell, Esta DeWitt; Kansas City.
 Stillwell, Robert Jerry; Kansas City.
 Stockwell, Una Elizabeth; Lawrence.
 Stodder, Frederick Gere; Burden.
 Stodder, Richard Henry; Burden.
 Stout, Floyd Hamilton; Hill City.
 Strand, Lillie Olivia; Independence.
 Stratton, Helen Irene; Lawrence.
 Strickland, Frances Wright; Hunnewell.
 Strong, Muriel; Lawrence.
 Stubbs, Walter Roscoe; Lawrence.
 Stutz, John Godfrey; Utica.
 Swanson, Minnie C.; McPherson.
 Tatman, Richard Byron; Coffeyville.
 Taylor, Edwin Moses; Hoxie.
 Taylor, George Emmett; Burlingame.
 Tennis, Blanche Margaret; Minneola.
 Testerman, Reed; *Morrison, Okla.*
 Thomas, George Pesler; Burlingame.
 Thomas, Leonard Ewing; *Kansas City, Mo.*
 Thomasson, Russell Wells; Glen Elder.
 Thompson, Arthur Ross; Oswego.
 Thompson, Hallie Armida; Lawrence.
 Thomson, LeRoy; Arkansas City.
 Thorpe, Ola Anderson; Manganville.
 Tibbals, Percy Beatrice; Lawrence.
 Tiemeier, Edward Henry; Lincolnville.
 Timken, Louis Bengeman; Bison.
 Tompkins, Emmett Arlyst; Portland.
 Tourtelot, Dale Francis; Galena.
 Tourtelot, Ray Dean; Galena.
 Trant, Ruth Mary; Edwardsville.
 Trock, Elmer Leigh; Parkerville.
 Troup, Francis Cochran; Logan.
 Tucker, Clark Edward; Kansas City.
 Tunney, Hubert James; Cleveland.
 Turner, Dora Cecile; Independence.
 Ufford, Mary Margaret; WaKeeney.
 Unapher, Bartelle; Moline.
 Unruh, Ezra Joelle; Hillsboro.
 Vanderschmidt, William Willis; Leavenworth.
 Van Sandt, Marguerite Eileen; Chanute.
 Veeder, Kirke Coldwell; Cherryvale.
 Veigel, Helen Ione; Wichita.
 Vermillion, Una; Tescott.
 Voelkner, Viola Matilda; Lawrence.

Walker, Carl I.; Lawrence.
 Walters, Velma Mary; Wakefield.
 Ward, Vincent Paul; Severance.
 Ward, Winifred Emily; Lawrence.
 Waterstadt, Bert; Detroit.
 Watson, Bertha; Minneapolis.
 Watt, Evelina Frances; Ellsworth.
 Watts, Dillard Verlet; Stilwell.
 Weaver, James B.; Belleville.
 Weaver, James Morton; Wichita.
 Weidlein, Glee Toews; Longton.
 Welsh, George Farnam; Lyons.
 Welty, Donald Regnier; *Bartlesville, Okla.*
 Wertz, William Jennings; Wichita.
 West, Genevieve; Lawrence.
 West, Winifred Melvina; Kinsley.
 Westfall, Juanita; Kansas City.
 White, Alberta George; *Kansas City, Mo.*
 White, Edith Kathryn; Lawrence.
 White, Florence Lutecia; Hutchinson.
 White, Marceo Antonio; Chanute.
 White, Walter Alfred; Deerfield.
 Wild, George Roder; *Kansas City, Mo.*
 Wilkerson, Catherine D.; Lawrence.
 Wilkinson, Buena Mae; Fall River.
 Willhelmy, Ellis Warner; Kansas City.
 Williams, Esther; Lawrence.
 Williams, Josiah Davies; Clay Center.
 Williamson, Augusta Barbara; *St. Louis, Mo.*
 Wilmoth, William Alvin; Concordia.
 Wilson, Comet Nelson; Paola.
 Wilson, Gail Elery; Beloit.
 Wilson, J. C.; Stafford.
 Wilson, Levi Vincent; Ellsworth.
 Wilson, Wedd; Horton.
 Windhorst, Emma Henry; Belpre.
 Windhorst, Freda; Belpre.
 Wing, Monta Eldo; Columbus.
 Wingate, Charles Ray; Varner.
 Woelk, Mary Elizabeth; Russell.
 Wolley, Ruth; Liberal.
 Wollner, Francis Morgan; WaKeeney.
 Wood, Mary Erinst; Minneapolis.
 Woodward, Victor D.; Delphos.
 Wulf, Martha Anna; Humboldt.
 Wyatt, Jessie Lee; Lawrence.
 Wynne, Roy Waldo; Norton.
 Yazel, Homer Allen; Muscotah.
 Yeater, Georgia Rains; Lawrence.
 Young, Frances Kathryn; Tonganoxie.
 Youngmeyer, Earl William; Lawrence.
 Zook, Tillman W.; Larned.

FRESHMAN, 725.

SPECIALS.

* Enrolled in another school of the University.

Allen, Gerard; Wichita.
 *Allis, Leland Carpenter; Manhattan.
 Axel, Raymond; Lawrence.
 Beck, Willard Herman; Baldwin.
 Beeson, Marie Edith; Lawrence.
 Beghtol, Fern Anna; *Kansas City, Mo.*
 *Bell, Ada Pearl; *Deadwood, S. D.*
 *Benson, Thatcher Wyllys; Independence.
 *Bernardin, Eugene Phillip; Parsons.
 *Bigger, Edward Pitzure; Burlingame.
 Blackmar, Winifred Margaret; Lawrence.
 *Blaylock, Fred Orville; DeSoto.
 Bradley, Elmer Holmes; Pleasanton.
 *Branch, Ralph Ashburn; Wichita.
 Brinton, Lola Mae; Mankato.
 *Brown, James V.; Dillwyn.
 Brownlee, Mary Angelina; Lawrence.
 Buerstette, Blanche E.; Topeka.
 *Burt, Archie Roy; Blue Mound.
 *Butts, Susie Elizabeth; Mulvane.
 *Caler, William Richard; Claffin.
 *Carper, Clay Charles; Minneapolis.
 Carter, Madilene Elizabeth; Lawrence.
 *Carter, Marion Leslie; Howard.
 Chapman, Helen; Kansas City.
 Clark, Esther Mary; Chanute.
 *Clawson, John Hawthorne; Thayer.
 Coe, Fordyce Barker; Lawrence.
 Coleman, Margaret; Lawrence.
 *Constant, Olive Jane; Lawrence.
 *Cook, Eugene Byron; Cherryvale.
 Cook, Jack Wallace; Coffeyville.
 *Cooney, Gray Wilford; Hoisington.
 Cox, Olin McKinley; Baldwin.
 *Creek, Olive May; *Kansas City, Mo.*
 *Curry, Lewis Allison; Dunavant.

SPECIALS—concluded.

- Day, Harry Edward; Canton.
 *DeVoe, George Melville; *Kansas City, Mo.*
 Dew, Adelaide; *Kansas City, Mo.*
 Dosbaugh, Mrs. William Mortimer; Cedar Vale.
 Driskel, Kelsie Elsworth; Lawrence.
 *Drought, Doris Faith; Kansas City.
 *Eagles, Homer Moore; Thayer.
 Elmore, Ruth; McCracken.
 Erickson, John Edward; Topeka.
 Faris, Ruth A.; Lawrence
 *Firestone, Clifford LeRoy; Anthony.
 *Fitzgerald, Edgar James; *Roswell, N. M.*
 Flintom, Lathrop Bullene; *Kansas City, Mo.*
 *Foster, James Ralph; Lawrence.
 Frame, Ethel Lovey; Bonner Springs.
 *Frater, Allan; Fredonia.
 Frizzell, Bertrand E.; Halstead.
 *Gafney, Ray E.; Winfield.
 *Gelvin, Clyde Richardson; Pratt.
 *Gilkey, Harry Melvin; Richmond.
 *Glasco, Willard Martin; Lawrence
 Goldsmith, Goldwin; Lawrence.
 *Gould, William Claude; Dodge City.
 *Graham, Roy William; *Walter, Okla.*
 Greenfield, Myrtle; Lawrence.
 *Groening, Abram A.; Hillsboro.
 *Hackney, Myron Winston; Leavenworth.
 Haines, Ralph Gideon; Girard.
 Himes, Josephine Lucile; Russell.
 Hall, Robert Floyd; Chanute.
 *Hall, Selden Glenn; Bonner Springs.
 *Hargett, Jay Earl; Florence.
 *Havekorst, Walter Benedict; Hanover.
 *Henderson, Homer Jay; Independence.
 Hoering, Lena; *Kansas City, Mo.*
 Hook, Hugh Lyle; Sabetha.
 Hook, Ruth; Leavenworth.
 Howarth, John Albert; Frankfort.
 Hughes, Osee Gladys; Lawrence.
 *Humphrey, Anita Josephine; Chanute.
 Johnson, Chase Benjamin; Lawrence.
 *Johnson, Emsley Thomas; Lawrence.
 Jolly, V. Ethel; Longton.
 *Jones, Viola; Fredonia.
 *Kampert, George Joseph; Seneca.
 *Kelly, Sherwin Finch; Lawrence.
 Kent, Isabelle Mary; Lawrence.
 Kernohan, George; Maplehill.
 *Kietzmann, Reinholdt Charles; Alta Vista.
 Kinney, May; Larned.
 *Klein, Randall Thomas; Wichita.
 *Knight, Nathaniel Passmore; Lawrence.
 Koepff, Albert William; Lawrence.
 Koester, Fred William; Atchison.
 *Kohl, Hugo Arthur; Hays.
 *Kreider, Charles Cottier; Lawrence.
 Krueger, George H.; Lawrence.
 *Lane, Clinton W.; St. Marys.
 *Laney, Thomas George; Erie.
 Lewis, Marion Florence; Lawrence.
 Lingenfelter, Lois Myra; Fredonia.
 *Longabaugh, Hazel; Lawrence.
 *Loomis, Arthur Kirkwood; Lawrence.
 Lovejoy, Edith Emeline; Lawrence.
 Lupton, Edwin Henry; Lawrence.
 Lupton, Margaret Edna; Lawrence.
 *Luckan, Louise Anna; Lawrence.
 *Lutz, George John; Cawker City.
 *Lynn, Clarence; Lawrence.
 *Madden, John Edgar; Auburn.
 *Maloney, Oliver Wayne; Lawrence.
 *Mitchell, John Wesley; Perry.
 *Malin, James Claude; Lawrence.
 Martin, Sibyl; Lawrence.
 Mee, William; *Oklahoma City, Okla.*
 Moore, William Henry; Tribune.
 Moser, Martha Minnie; Blue Rapids.
 *Murphy, Bryan; Leavenworth.
 *Murphy, John D.; Perth.
 McCandless, Earl; Hutchinson.
 *McDonald, Ira Malcolm; Lawrence.
 McElroy, John Willis; Harper.
 McIntee, Matthew Benedict; Lawrence.
 McKee, Laura Ethel; Lawrence.
 *McLaren, Lester Hugh; Tescott.
 McMurphy, John William, Madison.
 McPherson, Earl Waldo; Lawrence.
 *Norton, James Gerald; Newton.
 *Oles, Lawrence Maple; Independence.
 *Olhausen, Frank; Leavenworth.
 Ott, Gertrude; Eudora.
 Paramore, Roy Clayton; Larned.
 *Pringle, James T.; Alma.
 Proudft, Eleanor; Kansas City.
 Pureell, Marie Isabel; Ness City.
 Ragle, Florence Susan; Iola.
 Rechtenwald, Virginia M.; *Kansas City, Mo.*
 Rhine, Elton; Washington.
 *Rice, Alice; Lawrence.
 Rigby, Millard Frederick; Topeka.
 *Ritter, Llewellyn B.; *Cold Springs, Okla.*
 *Rogers, Charles Harvey; WaKeeney.
 *Rossier, Mathilde Rosalie; Onaga.
 *Rowles, Helen; Wamego.
 Rudebaugh, Anna Myrle; Denton.
 Ruhberg, George Noel; Leavenworth.
 Russell, Iris; Kansas City.
 *Ryan, Royal Rufus; Chapman.
 *Schenck, Fred Gerald; Burlingame.
 *Schroepfer, August Michael; Wamego.
 *Schroers, Edgar Charles; *St. Joseph, Mo.*
 Severson, Lewis Everett; Lawrence.
 Shaver, Harold Hasbrouche; Lovewell.
 *Skaer, Howard Arthur; Augusta.
 Smiley, Stanton Lambert; Wilder.
 Smith, Burton Esby; Marion.
 *Smith, Guido E.; Colby.
 Smith, Martha Louise; Lawrence.
 Somers, Dorothy Boyer; Newton.
 *Sparks, L. Gerald; Greensburg.
 *Stout, Bessie; Cherryvale.
 *Stout, Grace Marie; Cherryvale.
 Sturtevant, Ira Albert; Topeka.
 Sullivan, Elizabeth Antoinette; *Kansas City, Mo.*
 Swayze, Paul Daniel; Lawrence.
 *Takaki, Shinichi; *Tokyo, Japan.*
 *Tate, William; Kansas City.
 Taylor, Lora; *Kansas City, Mo.*
 Thomas, Mrs. Charles L.; Topeka.
 *Tippen, Ernest Elwood; Sterling.
 Titus, Lilla; Lawrence.
 Todd, George Cleveland; Lawrence.
 Travis, Lester Wayne; Coffeyville.
 *Treat, Burnett Forrest; *Little Rock, Ark.*
 Waitt, Mary Catherine; Wichita.
 Wallace, Charles Elliott; Winfield.
 *Walsh, Charles Albert; Beloit.
 Weightman, J. A.; Topeka.
 Weir, Otho James; Lawrence.
 *White, Oliver Wendell; Solomon.
 Wiggins, Gertrude; *Kansas City, Mo.*
 Wilson, William Wayne; Augusta.
 *Woelk, Eda Louise; Russell.
 *Wood, Rachel A.; Concordia.
 *Wulfekuhler, Irwin William; Leavenworth.
 Wright, Jessie Leone; *New Castle, Ind.*
 Wyland, Chester William; Harlan.
 Youmans, Coyetta Bernice; Osawatomie.
 Zuck, Frank James; Lawrence.

SCHOOL OF ENGINEERING.

SENIORS.

Ackers, Deane Emmett; Abilene.
 Anderson, Carl Otto; Rosedale.
 Arlin, Harold Wampler; Lawrence.
 Beckley, Andrew Trout; Cherryvale.
 Boltz, Clarence Weaver; Lawrence.
 Bower, Burnette; Mound City.
 Brand, Carl August; Lawrence.
 Buchannan, Joseph Peter; Minneola.
 Burke, Edmund Charles; Lawrence.
 Burt, Archie Ray; Blue Mound.
 Burton, Willard Augustus; Mound City.
 Cadmus, Walter Gordon; Parsons.
 Campbell, Fred Work; Lawrence.
 Chase, Charles Rowlings; Emporia.
 Christine, Laurance Nathan; Lawrence.
 Clark, Rowland Jesse; *St. Joseph, Mo.*
 Cooley, Samuel James; Kansas City.
 Copp, Clarence Robert; Eudora.
 Cote, Homer; Weir.
 Crawford, Hugh William; Lawrence.
 Crum, Harry Edwin; Lawrence.
 Deardorff, Fred Maynard; Lawrence.
 DeArmond, Frank Vere; Topeka.
 Diehl, Paul Adam; Peck.
 Easterday, Elton Ellsworth; Augusta.
 Eggen, Charles Borton; Lawrence.
 Elmore, Frank Baugh; Melvern.
 Forsythe, Alfred Vernon; Dodge City.
 Foster, Norman McCloud; Ellsworth.
 Foulk, Albert Carl; Lawrence.
 Fox, Frank Herbert; Lawrence.
 Griffith, Clarence Lee; Lawrence.
 Gunnels, Joel Orin; Paola.
 Hagenbuch, Charles William; Lawrence.
 Hainbach, Joseph Mathews; Chanute.
 Hawkins, George; Lawrence.
 Hill, Clarence James; Cawker City.
 Holden, James Henry; Chanute.
 Jackson, Henry Cushing; Arkansas City.
 Johnson, Carl Luther; Topeka.
 Johnson, George Daniel; Lawrence.
 Kelly, Sherwin Finch; Lawrence.
 Kietzmann, Charles Emil; Alta Vista.
 Kreider, Charles Cottier; Lawrence.
 Kruse, Schiller; Lawrence.
 Laney, Thomas George; Erie.
 Lefevre, Emil Clemens; Caney.
 Lindsey, Adrian Hobart; Lawrence.
 Major, Oscar Sellon; Wichita.
 Marshall, John Leroy; Rosedale.
 Mickey, Samuel Waite; Junction City.
 Morton, Thomas Q.; Atchison.
 McIntyre, John; Topeka.
 McLaren, Lester Hugh; Tescott.
 Nelson, Stanley Barrows; Lawrence.
 Nigg, Milton Wesley; Lawrence.
 Orton, James Wilbur; Lawrence.
 Pattinson, John Ralph; Hutchinson.
 Paul, Homer Harrison; Augusta.
 Pickering, Walter Roscoe; Galena.
 Rader, Valentine Simpson; Howard.
 Reed, Harold Raymond; Lawrence.
 Rolfs, Eugene Leonard; Lawrence.
 Rumsfeld, Herbert William; Lawrence.
 Rush, Lowell Lee; Lawrence.
 Russell, Harlan Arthur; Lawrence.
 Sevilla, Angel; *Danli, Honduras, C. A.*
 Skaggs, Claude Albertine; Winona.
 Slatery, Paul; Lawrence.
 Sloan, Charles Findley; Pomona.
 Smee, George Reezin; Wa Keeney.
 Smith, Gail Arthur; Great Bend.
 Spangler, Fred LePort; Leecompton.
 Sparks, Lloyd Gerald; Greensburg.
 Waite, William Jasper; Lawrence.
 Wakenhut, Carol John; Salina.
 Waldie, Robert; Lawrence.
 Watkins, Benjamin Franklin; Chanute.
 Wieters, Alfred Henry; Lanham.
 Yeokum, George Henry; Lawrence.

SENIORS, 80

JUNIORS.

Akers, Charles Edward; Leavenworth.
 Asendorf, William Fred; Garden Plain.
 Bell, Arnold Arch; Great Bend.
 Bell, George Andrew; Altoona.
 Bowman, George Monroe; *Kansas City, Mo.*
 Brodie, Nathaniel Louis; Lawrence.
 Brown, James Vittitow; Dillwyn.
 Brown, William Rollie; Lawrence.
 Carpenter, Robert Hugh; Coffeyville.
 Clawson, Millard Edward; Concordia.
 Cress, Howard Ralph; Clements.
 Davis, Robert Wallace; Lawrence.
 Dueker, Milton Stanley; Lawrence.
 Dyche, Lucien Reed; Lawrence.
 Farley, Samuel Frank; Kansas City.
 Fast, John Clarence; Hutchinson.
 Frier, William Thomas; Russell.
 Garvie, Hugh Alexander; Abilene.
 Gedney, Kenneth Hayde; *St. Marys.*
 Gibbens, Leon Draper; Nickerson.
 Gibson, Woodman Lee; Lawrence.
 Gish, Henry John; Abilene.
 Hart, Floyd Garvey; Topeka.
 Hartley, Irvin Walter; Lawrence.
 Hess, John Raymond; Topeka.
 Holland, Frank Delno; Pleasanton.
 Hough, Cecil Thomas; Lawrence.
 Hull, Louis Milton; Norton.
 Jones, Max Byron; *Kansas City, Mo.*
 King, J. Charles; Lawrence.
 King, Walter Allen; Cawker City.
 Kirtland, John O.; Salina.
 Kitchen, Edgar Roy; Rosedale.
 Krebs, Julius John; Lawrence.
 Kreigh, Hobart Russell; Lawrence.
 Leary, Ora George; Kansas City.
 Limbocker, Wayne Ernest; Lawrence.
 Lutz, Hobart Fred; Lawrence.
 Lynn, Clarence; Lawrence.
 Maloney, Owen Wayne; Lawrence.
 Marrs, Jay Dean; Lawrence.
 Marshall, Hugh; Coffeyville.
 Metcalf, Earl Boyd; Lawrence.
 Miles, Robert Cullen; Lyndon.
 McCormac, Silas Andrea; Osborne.
 McMillen, B. LeRoy; Minneapolis.
 Nelson, James Valentine; Hutchinson.
 Neumann, Warren Randolph; Lawrence.

JUNIORS—concluded.

Nitchy, George Walter; Lawrence.
 Palkowsky, Henry William; Collyer.
 Park, Bartholow; Atchison.
 Raemer, Fred William; Lawrence.
 Reedy, Howard Lester; Lawrence.
 Rose, Ernest Herbert; *Rowe, N. Mex.*
 Ruble, Roland Orval; Parsons.
 Ryniker, Frank Alvin; Wichita.
 Schoenfeldt, Edward Hermann; Independence.
 Schroepfer, August Michael; Wamego.
 Shreve, John Donald; White Cloud.
 Shughart, Charles Lester; Winchester.
 Slade, John Paul; Clay Center.
 Smith, Raymond Robert; Lawrence.
 Staggs, Horace Mitchell; Lawrence.
 Stevenson, Clyde Duncan; Lawrence.

Street, Gordon Frink; Lawrence.
 Stryker, Wilburn; Fredonia.
 Thompson, William Donald; Junction City.
 Truesdale, Roy Miller; Leavenworth.
 Uhrlaub, Ernst August; Lawrence.
 Uhrlaub, Rudolph Reinhart; Lawrence.
 Van Houten, Harold C.; Topeka.
 Waggoner, Jack Holmes; Topeka.
 Wagner, Page Paschal; Concordia.
 Walters, Fay Clarence; Lawrence.
 Warner, Robert Wilberforce; Topeka.
 Willson, Abner Rosebrugh; Lawrence.
 Winters, Ray; Kansas City.
 Wyatt, Wiley Jefferson; Lawrence.
 Young, Yssel Yoette; Junction City.

JUNIORS 79.

SOPHOMORES.

Arnold, Ercil Clyde; Chapman.
 Armstrong, Henry Ainsworth; Dodge City.
 Austin, Verle Lorraine; Irving.
 Beebe, Bion Elwood; Neodesha.
 Bennett, Alfred Starr; Pratt.
 Bennett, Clarence; Stafford.
 Benschmidt, Newton; Hutchinson.
 Bernardin, Eugene Philip; Parsons.
 Betsher, Carl Edwin; Eureka.
 Boese, Adolph; Hillsboro.
 Bonebrake, Frederick T.; Topeka.
 Booe, Cecil Morgan; Chanute.
 Boyd, Arthur Carl; Larned.
 Bradley, John Robert; Caldwell.
 Bressem, Paul Edward; Sabetha.
 Brewster, Edwin Stewart; Leavenworth.
 Brown, Ernest Lester; Coffeyville.
 Brown, Rex Leno; Lawrence.
 Brownfield, Maro Burke; Iola.
 Buck, William Emanuel; Rosedale.
 Butcher, Cary Preston; Wellington.
 Campbell, Francis Harold; La Cygne.
 Cary, William Tracy; Arkansas City.
 Chandler, George Leland; Topeka.
 Chandler, Ray Joy; Tonganoxie.
 Clark, George Arthur; Sedgwick.
 Cleek, John Leo; Cherryvale.
 Cohn, Byron Spencer; Lawrence.
 Coleman, Don Philip; Leavenworth.
 Couchman, Floyd Houghton; Garden City.
 Cronk, Seymour Hays; Stafford.
 Davis, John Clark; Salina.
 DeVoe, George Melville; *Kansas City, Mo.*
 DeWald, Daniel; Russell.
 Dillon, Clyde Wilson; Hutchinson.
 Drake, Charles Jackson; Jewell.
 Dunkley, George; Lawrence.
 Dye, Milton Lawrence; Jewell.
 Elledge, Emmett Russell; McCune.
 Ellison, James Arthur; Lawrence.
 Evans, Roger William; Lawrence.
 Eyer, Clarence George; Salina.
 Frater, Allan; Fredonia.
 Gage, Francis Dana; Minneapolis.
 Gerhard, Henry Anton; Girard.
 Grecian, Everett Joy; Hill City.
 Harrison, Donald Russell; Lawrence.
 Hart, Charles Edward; Glade.
 Hearld, Frank Cecil; Hutchinson.
 Henderson, Homer Jay; Independence.
 Hunt, Lewis Brooks; Abilene.
 Hunt, Valentine; Kansas City.
 Johnson, Martin Marion; Salina.
 Johnson, Samuel Chester; Eureka.
 Johnson, Virgil Glenn; Oneida.
 Jones, Harold McKinley; Kansas City.
 Jones, LeRoy M.; Lawrence.

Keener, Charles Alva; *Kansas City, Mo.*
 Kepple, Herbert; Richmond.
 Klemp, Albert S.; Leavenworth.
 Krueger, Max Henry; Atchison.
 LaMer, Joseph Secondule; Leavenworth.
 Lansing, Jack Courtney; Leavenworth.
 Law, Seaton Marcellus; McPnerson.
 Levin, Julius Harry; Kansas City.
 Mahan, Joe Rossinger; Independence.
 Martin, Charles Albert; Lawrence.
 Martin, Howard James; Stafford.
 Mason, Ray Benjamin; Lawrence.
 Mason, Robert Frazier; *Kansas City, Mo.*
 Mathews, Claud Kelsey; *Kansas City, Mo.*
 Melton, Robert Thomas; Tecumseh.
 McCall, Dana Hewitt; Hiawatha.
 Olson, Forrest Carl; Havensville.
 Owen, Toby Allison; Ft. Scott.
 Peckham, Jacob Walter; Clay Center.
 Penny, Myrl; Lawrence.
 Perkins, Lucius Junius; Lawrence.
 Pickering, Ernest; Lawrence.
 Quinlan, Amos Lawrence; Linwood.
 Record, Forrest Meade; Lawrence.
 Reid, Theodor; Carey; Stafford.
 Rhoades, Ralph Omer; Lawrence.
 Riley, William Stillman; Garnett.
 Roberts, Clifton; Kansas City.
 Rodgers, Charles Harvey; WaKeeney.
 Royce, Charles Franklin; Lawrence.
 Rummel, Ross; Reserve.
 Seward, Charles Lee; Neodesha.
 Sewell, Arthur Thomas; Garnett.
 Seybold, John Statis; Topeka.
 Shaft, Paul Emory; Lawrence.
 Sherwood, Leon Archibald; Independence.
 Smart, Ralph Francis; Stafford.
 Smith, Arthur J.; *Independence, Mo.*
 Smith, Harry Alvin; Horton.
 Sorgatz, William David; Concordia.
 Stewart, William Young; Hutchinson.
 Stoudt, William Edwin; Winfield.
 Stout, Clarence McKinley; Minneapolis.
 Strickland, Paul William; Lawrence.
 Sweeney, Edward J.; Ozawkie.
 Tate, James Noell; Lakin.
 Thomas, Chester L.; Topeka.
 Thralls, Warren Harrington; Wellington.
 Tracey, John Charles; Lawrence.
 Treat, Burnett Forrest; *Little Rock, Ark.*
 Troutman, John Franklin; *Kansas City, Mo.*
 Tuttle, Ellsworth Grant; Winfield.
 Van Seavk, William Vernon; Goodland.
 Vincent, Guy Morgan; Iola.
 Wagstaff, Richard Hibbard; Lawrence.
 Walters, Ray Pearce; Lawrence.
 Weekley, Ira Coleman; Lawrence.

SOPHOMORES—concluded.

Wehmeyer, Edmund Herman; Kansas City. Winn, Edward; Lawrence.
 Wheeler, Louis James; Iola. Wirtz, Andrew Theodore; Ellinwood.
 White, Karl Hardy; Lawrence. Wolfe, Roland John; Horton.
 White, Oliver Wendell; Solomon. Ziesenis, Harry Charles; Lawrence.
 Whittaker, John Chestnut; Lawrence. SOPHOMORES, 123.

FRESHMEN.

Abbey, Harry Jefferson; Galena.
 Adamson, Paul Dean; Lawrence.
 Albach, John Henry; Lawrence.
 Allen, Frederic Rollin; Marysville.
 Alsop, Dick Barr; Marysville.
 Armel, Nathaniel Amos; Humboldt.
 Atha, Joseph Samuel; Kansas City, Mo.
 Ausman, Joseph George; Fort Scott.
 Barber, Ira Everett; Humboldt.
 Barclay, James Fraser; Kansas City.
 Brandt, Fred; Sabetha.
 Barnes, Arthur Raymond; Ottawa.
 Barrackman, William Jordan; Humboldt.
 Beisner, Harold Owen; Natoma.
 Benson, John Leland; Lawrence.
 Black, Ralph Leland; Burlingame.
 Blum, Howard Freeman; Kansas City.
 Boman, Tom Glen; Chanute.
 Borders, James Thee; Lawrence.
 Bowersock, Ivan Walters; Wayside.
 Bowersock, Wilber Earl; Lawrence.
 Braddock, James Claude; Spearville.
 Brady, William Ignatius; Independence.
 Brink, Ernest Harold; Kansas City, Mo.
 Broberg, Earl John; Topeka.
 Brock, William McKinley; Lawrence.
 Brockett, Harold Fletcher; Bonner Springs.
 Buehler, Erwin James; Moundridge.
 Buffington, Chalmers Dale; Ness City.
 Bunn, John William; Humboldt.
 Burtch, Russell Alger; Iola.
 Caler, William Richard; Claflin.
 Carder, Early Haney; Lawrence.
 Carman, Julia; Herington.
 Carmody, Robert Arthur; Fredonia.
 Carver, Wilson Grey; Fort Scott.
 Christoff, Henry Christo; Kansas City.
 Clark, Roy Henry; Lawrence.
 Clawson, John Hawthorne; Thayer.
 Conquest, Victor; Kansas City.
 Costigan, Walter; Ottawa.
 Cunningham, Forrest Bain; Piper.
 Dance, Mark Granville; Pittsburg.
 DeForest, Lewis Harold; Wetmore.
 Dennison, Harold Thomas; Brockton, Mass.
 Doane, Philip Dann; Arkansas City.
 Doyle, Roscoe Miller; Lawrence.
 Eagles, Homer Moore; Thayer.
 Eckel, Carl Henry; Douglass.
 Farnsworth, Clyde Arthur; Douglass.
 Ferguson, Robert Eugene; Minneapolis.
 Fitzgerald, Edgar James; Roswell, N. Mex.
 Fox, Paul Samuel; Lawrence.
 Frank, Verne Edward; Irving.
 Fuller, Victor Sanford; Junction City.
 Ghrist, David Austin; Kansas City.
 Goforth, Earl Byron; Hobart, Okla.
 Gray, Lawrence Corwin; Kansas City, Mo.
 Guy, Erwin Leo; Sedan.
 Haddock, Marshall; Rosedale.
 Hahn, Loren Thomas; Dighton.
 Hale, Robert Kenneth; Eureka.
 Hall, Archie Leroy; Iola.
 Hall, Walter; Coffeyville.
 Harsha, Benjamin Dawson; Partridge.
 Hayden, Willard Henry; Lawrence.
 Henderson, Roy Elmer; Lawrence.
 Hildebrandt, Carl Emil; Leavenworth.
 Hill, Richard Lewis; Wichita.
 Hoiekvam, Donald Berger; Canon City, Colo.
 Hughes, Charles Donald; Lawrence.
 Humphreys, Mervin Karl; Fairmount.
 Hunter, Robert Francis; Kansas City, Mo.
 Icenhower, William M.; Lawrence.
 Jakowsky, John Jay; Independence.
 Jensen, Thomas Pete; Quenemo.
 Johnson, Albert William; Marquette.
 Jones, James Ebbert; Medicine Lodge.
 Kendall, Erwin Kenneth; Lawrence.
 Kendall, Frederick Calvin; Kansas City.
 Kennedy, Avery Roy; Blackfoot, Idaho.
 Kietzman, Reinhold Charles; Alta Vista.
 King, George Victor; Douglass.
 Kirby, William Brooks; Blue Mound.
 Kirkham, Lindsay Jack; Kansas City.
 Klamet, Henry Leonard; Tonganoxie.
 Klinkenberg, Carl Roland; Tonganoxie.
 Kohman, Girard Theodore; Dillon.
 Lampton, Fred Franklin; Cherokee.
 Latta, John Hardy; Wichita.
 Lauritsen, Niles Lauritz; Kansas City.
 Lefevre, Armand Joseph; Caney.
 Lesslie, Earl Jasper; Independence.
 Long, William Claire; Madison.
 Ludlow, Stewart; Lawrence.
 Lutz, George John; Cawker City.
 Lynn, George; Lawrence.
 Machamer, Hobart Ellis; Kansas City.
 Magill, Russell Charles; Sabetha.
 Malkmus, George Adolf; Kansas City, Mo.
 March, Harry Allen; White Cloud.
 Mason, Paul Abbott; De Soto.
 Mason, Robert Wagner; Lawrence.
 Masterson, Ernest; Sabetha.
 Mehl, Henry Guy; Beloit.
 Merritt, Paul Prowers; McCune.
 Messmore, Harold Eli; Morrill.
 Metcalf, Seward Estel; Coffeyville.
 Meyers, Percy Avery; Olathe.
 Miner, Erle Selden; Sabetha.
 Morris, Frank D.; Cimarron.
 McFarland, Paul William; Lawrence.
 McQueen, William Thomas; Easton.
 Nettles, Charles Henry; Topeka.
 Nettles, George Edward; Topeka.
 Olhausen, Frank; Leavenworth.
 Olmsted, Herbert Wolcott; Lawrence.
 Pendleton, Theodore Poehler; Lawrence.
 Pinnick, Ira Victor; Fowler.
 Potter, Sam Perry; Attica.
 Prewett, Vance Vernon; Asherville.
 Pruett, Clarence Grant; Macksville.
 Rand, William Howard; Cottonwood Falls.
 Randall, Graydon Huntington; Lyndon.
 Retschlag, Ernest Herman; Emporia.
 Roberson, Francis Rossier; St. Louis, Mo.
 Roush, Fossie Eber; Jewell.
 Russell, Chester Eugene; Enterprise.
 Russell, Ernest Dewey; Eudora.
 Ryan, Royal Rufus; Chapman.
 Sackett, Guy Elliott; Moline.
 Sanborn, Austin Phelps; Chapman.
 Sandifer, Robert Pattison; El Dorado.
 Saunders, Seymore Gordon; Lawrence.
 Shearer, William Edward; Bunkerhill.
 Sheidley, Hubert Orlandus; Kansas City, Mo.
 Shepard, Ross; Chapman.
 Stalcup, Ernest Floyd; Preston.
 Stanton, James Hendren; Leavenworth.
 Stephenson, Russell Allen; Tonganoxie.

FRESHMEN—concluded.

Stevenson, R Barton; *Kansas City, Mo.*
 Sutton, Clarence Avery; Parsons.
 Tarr, Arthur Aaron; Summerfield.
 Templin, Ernest A.; Minneapolis.
 Thomas, Paul Raymond; *Kansas City.*
 Thompson, Edward Mathew; Coffeyville.
 Thompson, William Keim; Topeka.
 Thurman, Harold DeBolt; Lawrence.
 Thurman, Robert Steele; *Joplin, Mo.*
 Walters, Robert Kingsley; Abilene.
 Ward, Charles Pleasant; Tonganoxie.
 Warders, Charles Edward; Irving.
 Warner, Floyd Emery; Melvern.
 Watkins, Roy Oliver; Chanute.
 Watson, Robert Winning; Leavenworth.
 Weidman, Donald Theodore; Neodesha.

Welch, Howard Moshier; Lawrence.
 Wentworth, Frank Reginald; Russell.
 Wenzel, John Herman; Enterprise.
 Wesley, Wendell Phillip; Stafford.
 Wheeler, Nathaniel Hawthorne; *Kansas City.*
 Whisler, Daniel Howard; Ft. Scott.
 Whitla, Lowell Reid; Edgerton.
 Williams, Charles Alvin; *Canon City, Colo.*
 Williams, Walter Phin; Neal.
 Worley, Wilbur Jennings; Sedan.
 Worrall, Anton Wallingford; Topeka.
 Wright, North Alderman; Atchison.
 Ziesenis, Roy Gus; Lawrence.
 Zimmerman, Earl Henry; Weitzer.

FRESHMAN, 170.

SPECIALS.

* Enrolled in another school of the University.

Abington, Robert Edward; Ft. Scott.
 *Boughton, Charles W.; Lawrence.
 Brooks, Leo Stanley; Pleasanton.
 *Brown, Ben Eli; Iola.
 Chase, James Lysle; Leavenworth.
 Colburn, Reno Berry; McCune.
 *Cook, Eugene Byron; Cherryvale.
 *Cook, Jack Wallace; Coffeyville.
 *Cox, Hubert Donald; Cedarville.
 Cushman, Frank; *Kansas City, Mo.*
 *Davis, Emanuel C.; Lawrence.
 *DeGroat, Bruce; *Salamanca, N. Y.*
 *Dressler, Frank A.; Mankato.
 Egan, Kyran William; Lawrence.
 *Fleming, Bruce Aldrich; Nickerson.
 *Gafney, Ray E.; Winfield.
 Gray, Alfred; Paxico.
 Hackney, Myron Winston; Leavenworth.
 Haines, William Mattison; Chanute.
 *Hargett, Ray H.; Lawrence.
 *Hayden, James R.; *Lexington, Mo.*
 *Jones, Ogden S.; Lawrence.
 LaMay, Russell; *Kansas City.*

*Landon, Ira; Mayetta.
 *Long, Eugene J.; Madison.
 Madden, John Edgar; Auburn.
 *Marr, Jay D.; Lawrence.
 Miner, Cecil S.; Burlingame.
 *McIntosh, Fred E.; Burns.
 Oles, Lawrence Maple; Independence.
 *Parkhurst, Ivan P.; Kinsley.
 *Potter, Floyd Ezra; Garnett.
 *Rhine, Elton; Washington.
 *Ruhberg, George N.; Leavenworth.
 Sammons, George Benjamin; Lawrence.
 Sandifer, James Allen; El Dorado.
 *Savage, Walter Gaskell; Winfield.
 *Shores, Harold Porter; Burr Oak.
 *Smith, Frederick H.; *Kansas City.*
 Somers, George Hall; Newton.
 *Starrett, Joe; Lawrence.
 *Tompkins, Emmett Arlyst; Portland.
 *Washington, Herschel L.; Leoti.
 Woodward, Frank Byron; Protection.

SPECIALS, 44.

SCHOOL OF FINE ARTS.

SENIORS.

Allen, Una Lorraine; Muscotah.
Anderson, Mary Ella; De Soto.
Barber, Mary Katharine; Holton.
Bell, Grace Adelaide; Lawrence.
Bocker, Helen Argelia; Solomon.
Davis, Edna Marie; Chanute.
Gruver, Temple Daisy; Lawrence.
Jones, Viola; Fredonia.
Ketchum, Pauline; Lawrence.
Libbey, Lois; Altamont.

Lockett, Dora Edna; Anthony.
Longabaugh, Hazel Joy; Lawrence.
Mackie, Mabel; Lawrence.
Perry, Eugene Schuyler; Wichita.
Petz, Grace Christine; Lawrence.
Preyer, Mary; Lawrence.
Sproul, Pauline; Sedan.
Stevens, Philip Flint; Lawrence.

SENIORS, 18.

JUNIORS.

Allen, Sarah Frances; Lawrence.
Fitch, Margaret Elizabeth; Lawrence.
Gossard, Mary Elizabeth; Oswego.
Hill, Vera Virginia; Smith Center.
Hopkins, Ednah Evelyn; Lawrence.
Lacy, Pearl Hazel; Lawrence.
Lawellin, Bonnie Myrtle; Garnett.
Lutz, Hattie Loretta; Jewell.

McCanles, Eva Josephine; Lawrence.
Rice, Alice; Lawrence.
Stimpson, Josephine Frances; Lawrence.
Talbert, Vesta; Conway Springs.
Thrall, Mildred E.; Neosho Falls.
Whitcroft, Ruby Harriett; Lawrence.

JUNIORS, 14.

SOPHOMORES.

Ainsworth, Elizabeth; Lyons.
Bell, Ida Dorothy; Lawrence.
Canfield, Mina Rosa; Holton.
Constant, Olive Jane; Lawrence.
Dale, Olivia Lanyon; Lawrence.
Dolechek, Christine Antoinette; Ellsworth.
Doyle, Gertrude Lois; Lawrence.
Dudley, Grace; Delphos.
Evertson, Letha A.; Melvern.
Graham, Roy William; Walters, Okla.
Haworth, Rose Elizabeth; Lawrence.
Henley, Marian; Lawrence.
Hungate, Charlotte Rannells; Albia, Iowa.
Merritt, Miriam; Hiawatha.

Montaldo, Lena; Noel, Mo.
McClintock, Pauline; Kansas City.
Peairs, Helen Haskell; Lawrence.
Pitts, Mildred Steele; St. Joe, Mo.
Riddle, Dorothy Winifred; Herington.
Risinger, Lois Marjorie; Fredonia.
Roebke, Doris Pauline; Holton.
Rowles, Helen; Wamego.
Weed, Helen Irene; Lawrence.
Weilepp, Lois Catherine; St. John.
Wharton, Thelma Isabelle; Parsons.
Woelk, Eda Louise; Russell.
Wolley, Hazel; Liberal.

SOPHOMORES, 27.

FRESHMEN.

Andrews, Jennie Grace; Everest.
Arehart, Harry Lloyd; Cherryvale.
Axtell, Mildred; Newton.
Batcheller, Norma; Lawrence.
Boyington, Thelma Lucile; Bird City.
Brown, Eugene Jesse; Lawrence.
Campbell, Neva Erminie; Esbon.
Creek, Olive May; Kansas City, Mo.
Darby, Florence; Kansas City.
Doran, Caroline Nagel; Kansas City, Mo.
Ellis, Flora Ruth; Lawrence.
Ellison, Leta Maude; Lawrence.
Elmore, Lucille Gertrude; Topeka.
Ferris, Emily Harriet; Hoisington.
Foster, Edward Wendell; Lawrence.
Foster, Harry Milton; Lawrence.
Frank, Della; Lawrence.
Gafney, Ray E.; Winfield.
Gardner, Mabelle Pearl; Neosho Falls.
Garton, Lola Mae; Larned.
Gillett, Delia Victoria; Burr Oak.
Gray, Marion Ruth; Lawrence.
Gregg, Helen Corinne; McCune.
Grohety, Lewella; Dodge City.
Grossenbacher, Sophia Elizabeth; Bern.
Hargett, Marion; Lawrence.
Harriman, Earl Drexel; Hepler.

Hendrickson, Bernice Elizabeth; Mankato.
Humphrey, Anita Josephine; Chanute.
Huoni, Josephine Ruth; Kansas City, Mo.
Imus, Irene; St. Joseph, Mo.
Jones, Beatrice; Hennessey, Okla.
Kell, Helen Hillman; Muskogee.
Kreamer, Beatrice Cozette; Kansas City.
Leach, Fred George; Arkansas City.
Mackie, Elizabeth C.; Lawrence.
Maher, Jeanne Marguerite; Joplin, Mo.
Martin, Mary; Kansas City, Mo.
Moore, Ella Marie; Kansas City.
McCanus, Irene; Newton.
Nelson, Gladys Irene; Neodesha.
Nevins, Gertrude Isabel; Blue Rapids.
Novel, Doris Reita; Rosedale.
Ocker, Edna Cecile; McLouth.
Parmenter, Alva Jane; Kingman.
Perkins, Dorothy Margaret; Barnard.
Phinney, Helen Lucille; Oskaloosa.
Pittenger, Lena Wilhelma; Arkansas City.
Porter, Helen Mary; Larned.
Pouliot, Adrian; Damar.
Raub, Lorna Marie; Lawrence.
Richards, Thelma Vivian; Effingham.
Roberts, Edna May; Greensburg.
Scott, Chasteena Fayette; Madison.

FRESHMEN—concluded.

Shane, Mildred Dora; *Kansas City, Mo.*
 Smith, Nellie; Horton.
 Snider, Helen Gertrude; Lawrence.
 Stout, Bessie; Cherryvale.
 Stout, Grace Marie; Cherryvale.
 Stryker, Mary Seymour; *La Grange, Ill.*
 Summers, Myra Cochran; Lawrence.
 Swagerty, Trevia Mae; Eskridge.

Trump, Mabelle Lucile; Formoso.
 Tudor, Mary Margaret; Holton.
 Ubrich, Frances Dorothy; *Kansas City.*
 Wasson, Ollie Ellen Jane; Codell.
 Watson, Neva; Minneapolis.
 Wood, Rachel Adah; Concordia.

FRESHMEN, 68.

SPECIALS.

* Enrolled in another school of the University.

Anderson, Ruth Caroline; Lawrence.
 *Anderson, Willard C.; Partridge.
 *Arnold, Cora Alice; Ottawa.
 Ashlock, Lorena Dot; De Soto.
 *Atwood, Esther; Caney.
 Bacon, Mary Louise; Hutchinson.
 *Bartley, Wanda Marie; Florence.
 Boyles, Ruth Irene; Lawrence.
 *Brown, Karl; Spearville.
 *Brown, Marian Cecil; Argentine.
 *Brush, Harriet Elizabeth; Lawrence.
 Burke, Lois Louise; Lawrence.
 *Butler, Florence Vale; Lawrence.
 Butts, Susie Elizabeth; Mulvane.
 *Carnie, Elizabeth Ewing; *Kansas City, Mo.*
 Chaplin, Gladys Albertina; Edgerton.
 Coffelt, Gola William; Blue Mound.
 *Cole, Dorothy Walker; Lawrence.
 Cook, Helen Letha; Coffeyville.
 *Coony, Paul John; Hoisington.
 *Cooper, Lloyd Frank; Hoxie.
 Courtney, Mary Edith; Lawrence.
 Cox, Grace Marie; Prescott.
 Coyne, Kathryn Louise; Lawrence.
 *Craig, Jessie Emma; Mortonville.
 *Darby, Olin Earnest; Washington.
 *Darby, Raymond V.; Washington.
 DeForest, Margaret May; Baldwin.
 Dewald, Amelia; Russell.
 Dicker, Mary Alice; Lawrence.
 *Dienst, Barbara Wilhelmina; Coffeyville.
 *Dorsett, Charlotte Elizabeth; Spearville.
 Dourzour, Mrs. Edna Helen; Lawrence.
 Drought, Doris Faith; *Kansas City.*
 Dunn, Elizabeth Corinne; Ottawa.
 *Edmonson, Ellen; Newton.
 *Fallis, Mabel Fay; Dighton.
 Farrell, Mrs. Joseph; Lawrence.
 Ferris, Alice Mary; Osage City.
 Fisher, Mrs. J. M.; Lawrence.
 Fisk, Jennie Marie; Lawrence.
 *Fouk, A. Carl; Lawrence.
 Frank, Ruth McCoid; Lawrence.
 Frankenburger, Josephine Todd; *El Paso, Tex.*
 *Garman, Mary Angela; *Pawhuska, Okla.*
 Getgey, Bertha Viola; Lawrence.
 *Gibson, Philip Charles; *Kansas City.*
 *Good, Donald Cameron; Hiawatha.
 Gorman, Joana Bess; Chapman.
 *Grutzmacher, Hugh Alton; Onaga.
 Hansen, Sadie Marie; Lawrence.
 *Hargis, Mary Elizabeth; Fowler.
 Heim, Marie Louise; *Kansas City.*
 *Henry, Gladys Margaret; Lawrence.
 Hetzel, Marcella; Lawrence.
 *Hill, Aeo; Neodesha.
 *Hitchens, Edna Pauline; Burlington.
 *Hogeboom, Doris May; Pittsburg.
 Holmes, Orlo Sylvester; Coldwater.
 Huntsman, Harold Rice; Lawrence.
 *Jackman, Ruth; Minneapolis.

Jones, Vergie Elizabeth; Nicodemus.
 *Kapfer, Edgar William; Colby.
 *Kinney, Agatha Pearl; *Muskogee, Okla.*
 Langmade, Nina Salome; Oberlin.
 Le Suer, Marion Barnes; Lawrence.
 Lewis, Guy; Eskridge.
 Logan, Helen Aline; Pawnee Rock.
 Logan, Louise Katherine; Quenemo.
 *Lohrding, Edna Rose; Coldwater.
 *Longstreth, Guy Vernon; Colony.
 Mackie, Elizabeth Elsie; Lawrence.
 *Marshall, Vivian; Leon.
 *Martling, Frances Hodgen; *Kansas City.*
 Martin, Frank; Lawrence.
 *Mason, Lorinda; Lawrence.
 Merrill, Emma E.; Lawrence.
 Messick, Clarence Roy; Topeka.
 Meyn, Fritz O.; Lawrence.
 *Miller, Lucile Annie; McPherson.
 *Mitchell, Alexander Baldwin; Lawrence.
 *Mitchell, Samuel Eben; Lawrence.
 Moershell, Mrs. Cora Belle; Lawrence.
 Moody, Marion Alexander; Girard.
 *Moore, Esther; Hutchinson.
 Moser, Inez McLucas; Meriden.
 Myers, Ann Marion; Topeka.
 McShea, Maud Isabel; Lawrence.
 O'Brien, Mavis Pauline; Lawrence.
 *Osborne, Edna Pearl; Lawrence.
 Paramore, Reva Pearl; Larned.
 Paramore, Ruth; Larned.
 Parrott, Laura Iseley; *Kansas City, Mo.*
 Pendleton, Emma Helen; Lawrence.
 Pickens, Mrs. Nelle; Lawrence.
 Plumb, Luella; Topeka.
 Protch, Reba Genevieve; Lawrence.
 *Pyle, Mary Llewellyn; Lawrence.
 *Ray, Jennie Mabel; Lawrence.
 *Remick, Geneva; Hoisington.
 Roberts, Henrietta Henderson; Lawrence.
 Rossier, Mathilde Rosalie; Onaga.
 Rudolph, Mrs. Rose Viola; Lawrence.
 Scheurer, Clara Henrietta; Lawrence.
 Searles, Isabel; Wetmore.
 Shick, Maud; *Big Spring, Tex.*
 Smith, Alta Madaline; Lawrence.
 *Smith, Mary Lucile; Lawrence.
 *Steckel, Marie; Ellinwood.
 Steele, Mrs. Elsie Wicks; Lawrence.
 *Stewart, Georgia Leah; *De Soto, Mo.*
 Stouffer, Mrs. Anna Shepard; Lawrence.
 *Strong, Muriel; Lawrence.
 *Stubbs, Walter Roscoe; Lawrence.
 *Suffield, Charles L.; McPherson.
 Talbot, Mrs. Homer; Lawrence.
 Thoren, Leila Gertrude; Eudora.
 Tucker, Marjorie Winslow; Lawrence.
 *Van Sandt, Marguerite Eileen; Chanut.
 Watts, Helen Mae; Corning.
 Wilson, Ailene Jacqueline; Clay Center.
 Wilson, Ella Marie; Topeka.
 Wilson, Jo Alta; Beloit.
 Wiltfong, Mrs. Hubert H.; Lawrence.
 *Young, Margaret; Fredonia.

SPECIALS, 124.

SCHOOL OF LAW.

SENIORS.

Allen, Ivan Alton; Washington.
 Baker, Milton Lindsley; Parsons.
 Baldwin, Clifford Waste; Seneca.
 Barba, Eusebio Carbonell; *Bacnotan Union*,
P. I.

Beach, George Henry; Lawrence.
 Beall, William Mosias; Grantville.
 Bennett, Reuben George; Newton.
 Blincoe, Ernest Edward; Fort Scott.
 Bond, Llewellyn Jack; Washington.
 Bowersock, Vernon James; Wayside.
 Bradley, Isaac Franklin; Kansas City.
 Burch, Allen Bank; Lawrence.
 Campbell, Daniel Swan; *Joplin, Mo.*
 Craig, Halleck Irwin; Independence.
 Crowley, William Joseph; Kansas City.
 Dittmer, Otto Hermann; Independence.
 Dodderidge, Kenneth Charles; White City.
 Egan, Lee Maynard; *Kansas City, Mo.*
 Fisher, Jesse Morgan; Lawrence.
 Flinn, John Piercy; Chanute.
 Friend, Paul Holston; Lawrence.
 Gaitskill, Joseph Ennis; Girard.
 Goppert, Ernest John; Paola.

Greever, Paul Ranous; Lansing.
 Gumbiner, Alton; Lawrence.
 Harlan, Harry; Smith Center.
 Kennedy, James Randolph; Fort Scott.
 Lott, Kenneth Harrison; Lawrence.
 Malsed, John Arthur; Parsons.
 Mattoon, Harold Frank; Lawrence.
 Miller, Henry Lawrence; Horton.
 Mitchell, Alexander Baldwin; Lawrence.
 Mulloy, Thomas Nicholas; Lincoln.
 Murphy, Albert Newton; Lawrence.
 McLoughlin, John Alexander; Leavenworth.
 McMeel, Bernard Francis; Meade.
 McMillin, Stewart Earl; Arkansas City.
 Nelson, Hoyt Sylvester; Lawrence.
 Piepenburg, Aaron Frederick; Lawrence.
 Rader, Ralph Roscoe; Severy.
 Riseley, Jerry Burr; Stockton.
 Sautter, Paul H.; Horton.
 Small, Richard Dante; Lawrence.
 Smith, Walter Edgar; Horton.
 Sproull, Ralph David; Lawrence.
 Weber, William John; Ellinwood.

SENIORS, 46.

MIDDLES.

Barteldes, Armin George; Lawrence.
 Benson, Thatcher Wyllys; Independence.
 Brewer, Lucius Holsey; Lawrence.
 Carter, Leslie Marion; Howard.
 Colley, Richard Price; *Tulsa, Okla.*
 Cowgill, Russell Twaddle; Lawrence.
 Davenport, Ross; Kansas City.
 Douglas, Arthur Lloyd; Crestline.
 Dykes, John Henry; Lebanon.
 Embry, Cecil Porter; Pratt.
 Flagg, Donald Sergeant; Lawrence.
 Fratcher, Frank A.; *Kansas City, Mo.*
 Frost, Austin; Lakin.
 Gates, Miles Walker; Rosedale.
 Gelvin, Clyde Richardson; Pratt.
 Guy, Francis Arthur; Wakefield.
 Hake, Wallace Otto; Minneapolis.
 Hargett, Jay Earl; Lawrence.
 Harrison, William David; Hutchinson.
 Havekorst, Walter Benedict; Hanover.

Hershberger, Arthur Wayne; Greensburg.
 Hettinger, John Adams; Hutchinson.
 Hoffman, Harry William; Lawrence.
 Jackson, Jared Fox; Atchison.
 Jones, Wilbur Harold; Wichita.
 Livingood, Floyd Mecham; Ottawa.
 Norton, James Gerald; Newton.
 Parker, Jabez Sherman; Hill City.
 Pausch, Fred LeRoy; Atchison.
 Pedroja, Edward Emil; Lawrence.
 Pringle, Kenneth Wilkie; Alma.
 Randolph, Clarence Albert; Clay Center.
 Rice, Carl; Coffeyville.
 Shinn, Earl Whittier; Burns.
 Smith, Elwin Leslie; Colony.
 Smith, Everett Garrison; Delphes.
 Smith, Guido Elwyn; Colby.
 Terrell, Frank Hixon; Holton.

MIDDLES, 38.

JUNIORS.

Allis, Leland Carpenter; Manhattan.
 Atwood, Clarence C.; Gardner.
 Bailey, Clarence Emmitt; Lawrence.
 Baker, Bruce Hudson; Ellsworth.
 Bell, Alexander Rankin; Chetopa.
 Benedict, Maurice Tenney; Lawrence.
 Benton, Willard Merriam; Kansas City.
 Boyajian, Nazareth C.; Lawrence.
 Brown, Benjamin Harris; Wichita.
 Browne, David Lisbon; Norton.
 Butler, Carl Balfour; Manhattan.
 Carlson, David Ernest; Caldwell.
 Carper, Charles Clay; Minneapolis.
 Casey, Thomas J.; Wichita.
 Charles, Roscoe Chauncey; *St. Ford*.
 Cobb, William Ballinger; Lawrence.
 Curran, John Emmett; Lawrence.
 Fink, Floyd Melvin; Downs.

Fogarty, John Lee; Lawrence.
 Fulcrut, Vernon Davies; Norton.
 Getgey, John Jacob; Mullinville.
 Gill, Walter M.; Lawrence.
 Glasco, Willard Martin; Piedmont.
 Golden, Reed Hollister; Kensington.
 Gorsuch, Cecil Otis; Sharon Springs.
 Hook, Enos Edward; Wichita.
 House, Harold Merwin; Douglas.
 Hyer, Albert Edward; Olathe.
 Irwin, Harold Martin; Anthony.
 Johnson, Morris; Salina.
 Jensen, Bernard Francis; Emporia.
 Klein, Randall Thomas; Wichita.
 Klock, Helmer Alfred; Lawrence.
 Knight, Nathaniel Passmore; Lawrence.
 Krugg, Consuelo Virginia; Coffeyville.
 Krumbach, John A.; Dexter.

JUNIORS—concluded.

Levi, Philip Lewis; Kansas City.
 Lobaugh, Farel Roy; Washington.
 Loren, Frank Julius; Atchison.
 Mason, Howard Ellsworth; Lawrence.
 Mendenhall, George Lester; Gove.
 Mendenhall, Richard Harlan; Gove.
 Miller, James Ellsworth; Iola.
 Milton, Gilbert Ashby; Kansas City.
 Mitchell, John Wesley; Perry.
 Montgomery, Harry Victor; Junction City.
 Murphy, John Damian; Perth.
 McCaleb, Charles Garnett; Lawrence.
 Pringle, James Thomas; Alma.
 Randall, Charles Bromfield; Lawrence.
 Rinker, Emory Roy; Wa Keeney.
 Rush, Oren Nixon; Haviland.
 Salvesen, Floyd Wilson; Lawrence.

Sawyer, Donald Lewis; St. John.
 Schell, Oliver W.; Lawrence.
 Shaw, Frederick Maurice; Holton.
 Shearer, Martin Pierce; Junction City.
 Simpson, James Albert; Salina.
 Smith, Frederick Harold; Kansas City.
 Sneed, Vernon Hobart; Haviland.
 Swaller, Sidney Robbins; Clay Center.
 Taylor, Stanley Clyde; Augusta.
 Tomlin, Walter Harry; Lawrence.
 Towers, William Henry; Kansas City.
 Walsh, Charles Albert; Beloit.
 White, Joe Nichols; White Cloud.
 Woodward, George; Lawrence.
 Zoellner, Walter Frank; Tonganoxie.

JUNIORS, 68.

SPECIALS.

* Enrolled in another school of the University.

*Anderson, Lyle Nathan; Partridge.
 *Baker, Fenton J.; *Joplin, Mo.*
 *Brown, George Austin; Baldwin.
 *Caffrey, John P.; Mount Hope.
 Casey, Joseph D.; Norton.
 *Dyche, Junius Walter; *Oklahoma City, Okla.*
 *Fritts, Ralph Victor; Paola.
 *Galle, James Lamer; McPherson.
 *Gardner, Jess Fleetwood; Preston.
 *Gear, Marvin Louis; Buffalo.
 Gould, William Claude; Dodge City.
 Gregory, William Edward; Cottonwood Falls.
 Halpin, Warren John; Ransom.
 *Heath, William Rea; Lawrence.

*Hetherington, Frank; Topeka.
 Jackson, Chilles Coyle; Coldwater.
 *Lytle, Harold Hopkins; Lawrence.
 McFarland, Frank Henry; Topeka.
 *Richmond, Alfred B.; Lucas.
 *Rogers, Ames Pattinson; Abilene.
 *Rose, Robert Bell; Rosedale.
 Schmidt, Ed Schermerhorn; Galena.
 *Tucker, LeVerne; Cawker City.
 *Waldo, Guy Lucian; Ellis.
 Webb, William Riffe; *Tulsa, Okla.*
 *Wertz, William Jennings; Wichita.
 *White, Joe Nicholas; White Cloud.
 Wulfekuhler, Irving William; Leavenworth.

SPECIALS, 28.

SCHOOL OF PHARMACY.

SENIORS.

FOUR-YEAR COURSE.

Blaylock, Fred Orville; De Soto.

Johnson, Emsley Thomas; Lawrence.

THREE-YEAR COURSE.

Bell, Ada Pearl; *Deadwood, S. D.*

Osborne, Herbert Leo; Wichita.

Cook, Eugene B.; Cherryvale.

TWO-YEAR COURSE.

Bignall, Bliss Olin; Alma.

Griffith, Louis Arnold; Scott City.

Brown, Joyce Elizabeth; Logan.

Kampert, Bernard Will; Seneca.

Cooney, John Paul; Hoisington.

Stewart, James MacLeod; Lawrence.

Diller, Howard Everette; Washington.

Swarts, Lawrence Patrick; Arkansas City.

Farris, Olen Rupert; Norwich.

Wilson, Glen Elijah; Lawrence.

Foster, Edgar Thomas; La Harpe.

SENIORS, 16.

JUNIORS.

FOUR-YEAR COURSE.

Kampert, George Joseph; Seneca.

THREE-YEAR COURSE.

Bloomheart, John Lester; Beverly.

Frevele, Earl Lorentz; Moundridge.

Childs, Wesley McClung; Kansas City.

Harrison, George; Lawrence.

TWO-YEAR COURSE.

Allen, Olive Grace; Sedgwick.

Moore, Donald; Canton.

Blake, Carl Howard, New Ulysses.

McColloch, Clark William; Lawrence.

Cooney, Gray Wilford; Hoisington.

Nelson, Walter Norvel; Whiting.

Crowell, Paul Alson; Pittsburg.

Schroers, Edgar Charles; *St. Joseph, Mo.*

Davis, Charles Edwin; Morganville.

Smith, Glen Ellsworth, Coffeyville.

Dieffenbacher, Clyde Charles; Cheney.

Smith, Otis Dale; Seneca.

Firestone, Clifford LeRoy; Anthony.

Smith, William Landon; Kansas City.

Gibson, Schuyler Wallace; Wa Keeney.

Spradlin, Clinton Bernard; Garnett.

Kohl, Hugo Arthur; Hays.

Thompson, Homer; Wichita.

Lewis, Harry Leonard; Topeka.

Wilson, Jack M.; Douglass.

Marhofer, Vernon; Ransom.

JUNIORS, 26.

SOPHOMORES.

FOUR-YEAR COURSE.

Draper, William; Lawrence.

McDonald, Ira Malcolm; Lawrence.

Howard, Roscoe David; Peck.

Skaer, Howard Arthur; Augusta.

THREE-YEAR COURSE.

Baker, Glen; Cherryvale.

O'Toole, Albert Thomas; Wa Keeney.

Barnes, Russel Bryan; Baxter Springs.

Spencer, Jack O.; Junction City.

Grissom, Barney Patterson; Syracuse.

Starrett, Joe; Lawrence.

Mehl, Byron Henry; Leavenworth.

SOPHOMORES, 11.

FRESHMEN.

FOUR-YEAR COURSE.

Marr, James John; Lovewell.

Patty, Frank Arthur; Lawrence.

McCurry, Frank Wright; Peru.

FRESHMEN, 3.

SPECIALS.

Bowles, Thomas R.; *Colorado Springs, Colo.* Murphy, Bryan; Leavenworth.

Meyer, Eugene Nicholas; Leavenworth.

SPECIALS, 3.

SCHOOL OF MEDICINE.

SENIORS.

Alberty, Watie Murl; *Westville, Okla.*
 Allen, Lewis George; *Lenexa.*
 Baker, Wilbur Arthur; *Holton.*
 Boone, Horace Ratliff; *Highland.*
 Castles, John Edgar; *Lawrence.*
 Clasen, Arthur Charles; *Rosedale.*
 Coleman, Herbert Rockwood; *Rosedale.*
 Conner, Samuel Walters; *Atchison.*
 Diveley, Rexford Leon; *Rosedale.*
 Edmiston, Roy Hammond; *Americus.*

Olsen, Henry Herman; *Baker.*
 Peterson, Daniel; *Atlanta.*
 Ragle, Harold Eugene; *Chanute.*
 Riney, Claude Raymond; *Dodge City.*
 Swinney, Raymond Wooldridge; *Rosedale.*
 Vermillion, Earl Le Roy; *Tescott.*
 Wallendorf, Leo Henry; *Kansas City, Mo.*
 Ward, Roscoe C.; *Belleville.*
 Whitaker, William Otto; *Kiowa.*

SENIORS, 19.

JUNIORS.

Belknap, Paul Edward; *Atlanta.*
 Bresette, Louis Lafe; *Topeka.*
 Campbell, Fred Bennett; *Esbon.*
 Chapman, James Walter; *Shelbina, Mo.*
 Culter, Robert Clyde; *Emporia.*
 Ewaldt, Paul Peter; *Lawrence.*
 Gloyne, Louis Boucher; *Kansas City.*
 Hazzard, Lawrence Rosseau; *Wichita.*
 Henderson, Harry Edwin; *Alma.*

Hobbs, Arthur Alexander; *Kansas City, Mo.*
 Howden, Thomas Lawrence; *St. Joseph, Mo.*
 Janes, William Earl; *Spring Hill.*
 Miner, Oliver William; *Sublette.*
 Oechsli, Waldo Raymond; *Lawrence.*
 Owens, Hugh Henry; *Chanute.*
 Viereg, Frank Ray; *Kansas City, Mo.*
 Whitney, Elmer Lemuel; *Talmage.*

JUNIORS, 17.

SOPHOMORES.

*Enrolled in another school of the University.

Albaugh, Houghton Samuel; *Topeka.*
 *Booth, Myron M.; *Hutchinson.*
 *Burke, Esther Margaret; *Lawrence.*
 *Burkhead, Carl Roscoe; *Centerville.*
 Colt, James Dennison; *Manhattan.*
 *Daniel, Harvey Oscar; *Lawrence.*
 *Dyche, Lewis Lindsay; *Lawrence.*
 Engel, Lawrence Power; *Lawrence.*
 *Fuller, Clinton Charles; *Peabody.*
 *Gilles, Clifford Lawrence; *Kansas City.*
 Grayson, Roy David; *Oskaloosa.*
 Green, Stanley L.; *Independence.*
 *Hardy, Mabel; *Altoona.*
 *Hart, Pattie; *Grenola.*
 *Hashinger, Edward Hagerman; *Lawrence.*
 *Hepler, Russel Calvin; *Cottonwood Falls.*
 Hill, Lee Verne; *Osborne.*
 Marquis, George; *Lawrence.*

*Mellan, Sherwin; *Leavenworth.*
 Milligan, Jay McDonald; *Lawrence.*
 *Nelson, Charles Sumner; *Westphalia.*
 *Nelson, Lawrence Strong; *Iola.*
 Neptune, Harold Everette; *Salina.*
 *Nodurft, Elmer J.; *Lawrence.*
 *O'Donnell, Frederick Ross; *Ellsworth.*
 *Riste, Rose A.; *Lawrence.*
 Sellers, Lyle Michael; *Leavenworth.*
 Sherman, Hal Wilbur; *Lawrence.*
 *Stofer, Dar Delos; *Lawrence.*
 Tait, John Henry; *Lawrence.*
 Tippin, Ernest Elwood; *Sterling.*
 Uhls, Kenneth Benton; *Overland Park.*
 Williams, James Lisle; *Chetopa.*
 Yates, Blyden William; *Lawrence.*

SOPHOMORES, 34.

FRESHMEN.

*Enrolled in another school of the University.

*Ashton, Annette Hughes; *Lawrence.*
 Bigger, Edward Pitzure; *Burlingame.*
 Black, W. Byron; *Lawrence.*
 Bouvy, Leo Benedict; *Ottawa.*
 *Calene, John Lucian; *Sylvan Grove.*
 *Champlin, Paul B.; *Canton.*
 *Church, Harry Lester; *Pittsburg.*
 *Cole, Warren Henry; *Clay Center.*
 *Day, Cameron Donald; *Lawrence.*
 *Deacon, Thomas Crosby; *Topeka.*
 *Emerson, Ralph Waldo; *Osborne.*
 Furgason, Earl Reuben; *Garnett.*
 Gambee, Louis Phaon; *Portland, Ore.*
 Gilkey, Harry Melvin; *Richmond.*
 *Gray, Helen Emily; *Lawrence.*
 *Gurdon, William David; *Topeka.*
 *Hadley, Ernest Elvin; *Alton.*
 *Hakan, Albert Joel; *Kansas City.*

Hendrickson, Floyd Chester; *Dresden.*
 *Hertzler, Agnes Hancock; *Kansas City, Mo.*
 *Hoch, Frank Michael; *Wilson.*
 *Johnson, Thurston L.; *McPherson.*
 Kehl, Charles Cyrus; *Newton.*
 Lane, Clinton Welsh; *St. Marys.*
 Lohrentz, Abraham M.; *Moundridge.*
 *Markley, Della Denmyer; *Minneapolis.*
 *Mowery, Glen Edsel; *Scott.*
 *Myers, Burton Allen; *Osborne.*
 *Pace, John David; *Parsons.*
 *Patrick, Ruth; *Randall.*
 *Pettersen, Edward Chester; *Beloit.*
 Pickerel, Fred Beverly; *Wichita.*
 Robinson, Roscoe John; *Tescott.*
 *Ruble, Merl Calvin; *Parsons.*
 Schenck, Fred Gerald; *Burlingame.*
 *Scott, James M.; *Mankato.*

FRESHMEN—concluded.

- Smith, Roy Esmond; Winchester.
 *Stephens, Brooks Palmer; Kansas City.
 *Stivison, Roy Elliot; Lyndon.
 *Stockton, Marcellus L.; Gridley.
 Sullivan, Bradley; Mt. Hope.
 Tate, William; Kansas City.
 *Thiele, George Henry; Washington.
- *Tucker, Marcus Othello; Hutchinson.
 *Veatch, Harry John; Weir City.
 Walter, Edmund Kurt; Lawrence.
 Welker, Joseph Edward; Lawrence.
 *Weltmer, Ward Wallace; Smith Center.

FRESHMAN, 48.

TRAINING SCHOOL FOR NURSES.

- Alexander, Leah; Mayfield.
 Duwall, Minnie Alice; Arkansas City.
 Ehrman, Ada Millicent; West Mineral.
 Fowler, Roxie Ann; Unionville, Mo.
 Gragg, Jessie Hazel; Arkansas City.
 Green, Ruth Agnes; Independence, Mo.
 Hall, Mabel Fern; Cherokee.
 Halverstadt, France Lucile; Oxford.
 Hennessy, Nell May; Kansas City, Mo.
 Hutchison, Mrs. Nova Thomas; Rosedale.
 Kessler, Dora; Hutchinson.
 Lillis, Abigail Lenore; Lawrence.
 Manson, Alyce Isabel; Rosedale.
 Markley, Corynne Ellen; Minneapolis.
- Meyers, Mrs. Golda Duncan; Chanute.
 Mitts, Augusta Jane; Columbus.
 Montee, Emma Lelia; Rosedale.
 McCort, Jessie; Wellington.
 McCoy, Hannah Elsie; Rogers, Ark.
 McKee, Mary Edith; Caney.
 Omer, Stella; Mankato.
 Turner, Ola Ethel; Independence.
 Vaughn, Ruth Vivian; Rosedale.
 Weber, Hilda Myrtie; Mayfield.
 Whitmore, Wilma Elsie; Manhattan.
 Wilhite, Nina May; Bartlesville, Okla.
 Zwick, Alice May; Lawrence.

NURSES, 27.

SCHOOL OF EDUCATION.

GRADUATES.

*Enrolled in another school of the University.

- *Amos, Thyrsa Wealtha; Spivey.
- *Anderson, Forrest Nelson; Lawrence.
- *Andrews, Hal Edgar; Coffeyville.
- *Brook, Elizabeth Cable; Lawrence.
- *Bruington, Clarke; Dodge City.
- *Carpenter, Raymond Hamilton; Topeka.
- *Carr, Merritt Virginia; Leavenworth.
- *Delay, Glenn Adney; Emporia.
- *Derr, Charles Haskell; Baldwin.
- *Hargett, Helen Ruth; Lawrence.
- *Jaggard, Guy Hathaway; Lawrence.
- *Lindstrom, George Henry; Marquette.
- *Longabaugh, Cecil Mae; Lawrence.
- *Loomis, Arthur Kirkwood; Lawrence.
- *Lovejoy, Elizabeth Burt; Lawrence.
- *Miller, George LeRoy; Eureka.
- *Payne, Ruth Davenport; Wichita.
- *Peairs, Ruth; Lawrence.
- *Ritter, Neva; Iola.
- *Sloan, James Carlos; Eskridge.
- *Spencer, Anna Ruth; Emporia.
- *Suffield, Charles L.; McPherson.
- *Terry, George Sylvester; Chanute.
- *Testerman, Iva Bernice; Lawrence.
- *Warren, William John; Garnett.
- *Watson, Olive; Minneapolis.
- *Wilhite, Bessie; Lawrence.
- *Wynn, George Earl; Marquette.

GRADUATES, 28.

SENIORS.

- *Abel, Clara Mildred; Lawrence.
- *Ainsworth, Lydia Louise; Lyons.
- *Allvine, Glendon; Kansas City.
- *Anderson, Mabel; Lawrence.
- *Anderson, F. E. May; *Pueblo, Colo.*
- *Angevine, Dorothy Lou; Lawrence.
- *Atkinson, Lila; Lawrence.
- *Auchard, Ralph E.; Clay Center.
- *Beckley, Grace; Cherryvale.
- *Bixby, Abigail Connelia; McPherson.
- *Blackburn, Vera Edith; Larkenburg.
- *Blair, John Alvin; McPherson.
- *Boyles, Bernice; Lawrence.
- *Brown, Dorothy Thornton; *Joplin, Mo.*
- *Brown, Nettie Belle; Peabody.
- *Cain, Robert Augustus; Pittsburg.
- *Carson, Hazel Ellen; Ashland.
- *Castles, Ruth Minerva; Lawrence.
- *Coffin, Dora Belle; Lawrence.
- *Cole, Stella May; Lawrence.
- *Coleman, Margaret; Lawrence.
- *Coons, Glenn Claypool; Independence.
- *Crouch, Alice Amelia; *Ft. Stockton, Tex.*
- *Cruzan, Evelyn May; *Bethany, Mo.*
- *Daniels, Ruth Natalie; Hiawatha.
- *Darby, Olin Earnest; Washington.
- *Davison, Roy; Nickerson.
- *DeMare, Adelina; Lawrence.
- *Dielmann, Reta Hazel; Winfield.
- *Duncan, Evelyn Edith; *Excelsior Springs, Mo.*
- *Duncan, Mabel; *Perry, Okla.*
- *Dunigan, Florence Esther; Lawrence.
- *Duvall, Alice Lucy; Hutchinson.
- *Dykes, Sara Ada; Lebanon.
- *Ecroyd, Guy L.; Arkansas City.
- *Ellis, Frances Maud; El Dorado.
- *Elliott, Arthur Edward; Lawrence.
- *Elmore, Mabel Marshall; Tecumseh.
- *Else, Daniel Henry; Lawrence.
- *Fisk, Harry Clay; Lawrence.
- *Fletcher, Liona Blanche; *Lamar, Mo.*
- *Foster, Nelle; Olathe.
- *Foster, Jessie Ruth; Achilles.
- *Frederick, James Vincent; Bonner Springs.
- *Friskie, Helen Gertrude; Oskaloosa.
- *Gallagher, Helen Marie; Lawrence.
- *Gard, Blanche Alice; Iola.
- *Govier, Mary Louise, *Kansas City, Mo.*
- *Graff, Marie Octavia; Topeka.
- *Gregory, Marguerite Electa; Lawrence.
- *Griffith, Rosalie May; Lawrence.
- *Gutzmacher, Hugh Alton; Onaga.
- *Gustafson, Mary; Lawrence.
- *Hall, Gail; McPherson.
- *Harris, Cathelen Rose; Eudora.
- *Hawkins, Ashley Dorothy; Lawrence.
- *Heacock, Alvin Earl; Attica.
- *Hedrick, Nancy Louise; Friend.
- *Hendrickson, Ethel E.; Lawrence.
- *Hilsman, Itasca Powell; Kansas City.
- *Hoar, Florence Eckert; Lawrence.
- *Hostetter, Anita Miller; Lawrence.
- *Hurley, Gertrude Ellen; Leavenworth.
- *Irvine, Frances Belle; Fort Scott.
- *Jackson, Ruth S.; Lawrence.
- *Jacobs, Sara Frank; McPherson.
- *Johnson, John Wesley; Newton.
- *Jolliffe, Carl L.; Hewins.
- *Jones, Mary Lenora; Lawrence.
- *Joseph, Frances Marion; White Water.
- *Kilgore, Violet Georgia; Wichita.
- *Kirkendall, Jeanne Mabel; Natoma.
- *Klinck, Frances Marian; Anthony.
- *Knapp, Roy Stanley; Wichita.
- *Krehbiel, Luella Minerva; Moundridge.
- *Lahn, Anita; Wichita.
- *Lindsay, Jean; Topeka.
- *Lindsay, Marian Anna; Topeka.
- *Luckan, Gladys; Lawrence.
- *MacKinnon, Inez M.; Kansas City.
- *Markham, Dorothy; Pittsburg.
- *Marshall, George H.; Lawrence.
- *Martin, Ethel Marguerite; Lawrence.
- *Martin, Josephine; *Kansas City, Mo.*
- *Martin, Lottie Gretchen; *Kansas City, Mo.*
- *Miller, Dorothy; Topeka.
- *Miller, Forest Jennings; Lawrence.
- *Miller, Harold C.; Chanute.
- *Moore, Helen; Hutchinson.
- *McClenahan, John Stuate; Miltonvale.
- *McDonnell, Agnes Marie; Kansas City.
- *McElvain, Margaret; Hutchinson.
- *McKinney, Mary Emma; Iola.
- *McNutt, Carolyn; *Kansas City, Mo.*
- *Patterson, Chester March; Galena.
- *Patterson, Helen Marguerite; Victoria.
- *Powell, Artemesia; Lawrence.
- *Ramsey, Leona Daisy; Lawrence.
- *Ray, Jennie Mabel; Lawrence.

SENIORS—concluded.

- *Rearick, Anna Christine; *Aurora, Mo.*
- *Reeves, Irene Janette; *Dodge City.*
- *Rively, Isidore; *Kansas City.*
- *Rodkey, Fred Stanley; *Blue Rapids.*
- *Ross, Zlema Ann; *Sterling.*
- *Ruhlandt, Helen Hays; *Osawatomie.*
- *Russell, Jean; *Lawrence.*
- *Russell, Louise Hays; *Amarillo, Tex.*
- *Sankee, Rachel; *Lawrence.*
- *Scott, Iva Essie; *Solomon.*
- *Sharpless, Gladys; *Atchison.*
- *Shefry, Marion; *Wichita.*
- *Shinn, Cora; *Lawrence.*
- *Smith, Esther Louise; *Welda.*
- *Smith, Lucile; *Lawrence.*
- *Soller, Dena A.; *Washington.*
- *Sparr, Dora Echo; *Lawrence.*
- *Spicer, Miriam Russell; *Lawrence.*
- *Stevenson, Ruth Mary; *Paola.*
- *Stoll, Elva Lucile; *Lone Elm.*
- *Stotts, Grace Merle; *Bonner Springs.*
- *Swanson, Carl A.; *McPherson.*
- *Swearingen, Gladys Orpha; *Morrison, Okla.*
- *Talbot, Lucille; *Lawrence.*
- *Thomas, Edith Helen; *Lawrence.*
- *Trinkle, Josie Marguerite; *Lawrence.*
- *Ulrich, Elizabeth Lucile; *Lawrence.*
- *Upton, Mina; *Rosedale.*
- *Utermann, Auguste Margaret; *Lawrence.*
- *Utermann, Marie Theresia; *Lawrence.*
- *VanHorn, Amy Gladys; *Lawrence.*
- *Walling, A. Via; *Lawrence.*
- *Wilkin, Lola May; *Lawrence.*
- *Willmann, Edna Marie; *Lawrence.*
- *Woodruff, Marie; *Lawrence.*
- *Young, Robert Alan; *Lawrence.*

SENIORS, 135.

JUNIORS.

- *Adams, Frances; *Lawrence.*
- *Anderson, Eva-Bell; *Lawrence.*
- *Anderson, Gladys Camilla; *Lawrence.*
- *Arnold, G. Brandt; *Newton.*
- *Auchard, Virgil Marion; *Wakefield.*
- *Bean, Marjorie Lillian; *Lawrence.*
- *Beverstock, Ruth L.; *Lawrence.*
- *Bingham, Sarah Bernice; *Wichita.*
- *Blurton, Nell Florence; *Bucklin.*
- *Bowes, Joseph Leroy; *Almena.*
- *Brauer, Alfred Charles; *Newton.*
- *Brown, Joyce Adine; *Olathe.*
- *Brownlee, Mary Angelina; *Lawrence.*
- *Bryan, Jennie Maude; *Waterville.*
- *Bunger, Frances May; *Alta Vista.*
- *Burgert, Eran O.; *Lawrence.*
- *Carnie, Kathleen; *Kansas City, Mo.*
- *Carr, Pauline Ruth; *Augusta.*
- *Charles, Harry L.; *Wichita.*
- *Cole, Dorothy Walker; *Lawrence.*
- *Corel, Gladys Fay; *Lawrence.*
- *Cory, Eugenia Frances; *Lawrence.*
- *Daniel, Lola Lee; *Pensacola, Fla.*
- *Daum, Frieda; *Lawrence.*
- *Deibel, Maria; *Lawrence.*
- *Dolecek, Edna Helen; *Lawrence.*
- *Dring, Ruth Lorilla; *Lawrence.*
- *Endacott, Ruth Beatrice; *Lawrence.*
- *Fogarty, Katherine; *Lawrence.*
- *Forsythe, Anna Elizabeth; *Edgertod.*
- *Friedberg, Fay Sarah; *Topeka.*
- *Frye, Ora; *Lincoln.*
- *Fuger, Golda Margaret; *Wathena.*
- *Fuller, Ilde Wilson; *Lawrence.*
- *Garman, Helen Rose; *Lawrence.*
- *Gaskill, Gussie Esther; *Lawrence.*
- *Giger, Harold Henry; *Elmdale.*
- *Hackerott, Agnes Marie; *Osborne.*
- *Hadley, James Wilbur; *Coldwater.*
- *Hangen, Eva Catherine; *Wellington.*
- *Harter, Gladys; *Douglass.*
- *Hawkins, Ulista Alice; *Lawrence.*
- *Helmer, Sophia Bertha; *Lawrence.*
- *Hilton, Willard O.; *Cottonwood Falls.*
- *Hostetter, Marie Miller; *Lawrence.*
- *Huntington, Forest William; *Lawrence.*
- *Husson, Margaret Sabina; *Kansas City.*
- *Hypes, Hazel E.; *Topeka.*
- *Jillson, Everett Leon; *Emporia.*
- *Johnson, Anna Mary; *Kingman.*
- *Johnson, Frederica; *Blue Rapids.*
- *Johnson, Howard Henry; *Garnett.*
- *Kreeck, Charlotte; *Lawrence.*
- *Kubik, Clara Mary; *Caldwell.*
- *Kubik, Emily Clementia; *Caldwell.*
- *LaCoss, Gertrude Martha; *Lawrence.*
- *Leibengood, Nelle; *Paola.*
- *Levi, Laura May; *Olathe.*
- *Lynam, George; *Moline.*
- *MacNaughton, Mabel Gertrude; *Tonganoxie.*
- *Mannix, Winnifred; *Overbrook.*
- *Martin, Lillian Mae; *Topeka.*
- *Means, Lucile Ingels; *Hiawatha.*
- *Mitchell, Basil; *Burlington.*
- *Moody, Minnie Elizabeth; *Leavenworth.*
- *Morgan, Harry Hill; *Alta Vista.*
- *Moser, Paul; *Meriden.*
- *Musson, Edith; *Norborne, Mo.*
- *McClure, Mary; *Kansas City, Mo.*
- *McKinney, Helen Julia; *Iola.*
- *McVey, Roy Vernon; *Mt. Ida.*
- *Nicholson, Mary Morse; *Newton.*
- *Parkinson, Hazel Emeline; *Topeka.*
- *Pedroja, Mary; *Lawrence.*
- *Phenicie, Edith Anne; *Tonganoxie.*
- *Porterfield, Lois; *Holton.*
- *Potter, Clarence Earl; *Lawrence.*
- *Querfeld, Dorothy J.; *Lawrence.*
- *Raymond, Katherine; *Lawrence.*
- *Reding, Katherine Prue; *Lawrence.*
- *Richardson, Hermina M.; *Lawrence.*
- *Rickard, Marjorie Adeline; *Lawrence.*
- *Roberts, Mary Frances; *Lawrence.*
- *Robinson, Helen B.; *Salina.*
- *Rogers, Annie Isabel; *Lawrence.*
- *Rogers, Lena Edith; *Wellington.*
- *Roop, Esther; *Abilene.*
- *Rose, Mildred Edith; *Rosedale.*
- *Rummel, Emma May; *Independence, Mo.*
- *Rush, Ethel May; *Kansas City, Mo.*
- *Russell, Cora Thyra; *Amarillo, Tex.*
- *Schell, Mignon Bernice; *Wichita.*
- *Schreiber, Fred Carl; *Leavenworth.*
- *Schroeder, William Alvin; *Hillsboro.*
- *Schultz, Madeline; *Barnes.*
- *Schwarz, Josephine Marie; *Wilson.*
- *Scott, Ethel; *Columbia.*
- *Selig, Mary Frances; *Lawrence.*
- *Senhausen, Julian; *Leavenworth.*
- *Shanton, Lynn Clyde; *Kensington.*
- *Sheets, Linnie V.; *Lawrence.*
- *Skinner, Frances Marie; *Columbus.*
- *Skinner, Hazel; *Garden City.*
- *Slaven, Eulalia Hazel; *Glen Elder.*
- *Smiley, Clara Pearl; *Silver Lake.*
- *Smith, Mary Ellen; *Pleasanton.*
- *Spreier, Amy; *Pawnee Rock.*
- *Sterling, Lucile; *Lawrence.*
- *Stevenson, Margaretta Price; *Leavenworth.*
- *Sturgeon, Vivian Virginia; *Lawrence.*
- *Thomann, Frank Charles; *Summerfield.*
- *Thomas, Charles Leonard; *Lawrence.*
- *Thomas, Ruth Laura; *Lawrence.*
- *Thompson, Ina Theo; *Marion.*

JUNIORS—concluded.

- *Thompson, Wiley Lane; Lawrence.
- *Tomlinson, Lydia; Independence.
- *Totten, Orpha M.; Beattie.
- *Tremaine, Minnie D.; Iuka.
- *Tucker, Dorothy; Lawrence.
- *Uhl, Mignonette; *Carthage, Mo.*
- *Van Arsdale, Mary Evangeline; Lawrence.
- *Water, Jane; Bonner Springs.
- *Watson, Charles Hoyt; Lawrence.
- *Wedd, Helen Frances; Lenexa.
- *Weidlein, Nellie; Lawrence.
- *Weigand, Herman; La Crosse.
- *Whitehead, Ennis Clement; Westphalia.
- *Windsor, Grace; Lawrence.
- *Wise, Monona Deards; Lawrence.
- *Wood, Roberta Virginia; Lawrence.
- *Woodard, Parke Harold; Wichita.
- *Young, Arthur Raymond; Wichita.

JUNIORS, 132.

SOPHOMORES.

- *Bennett, Lawrence; Lawrence.
- *Brown, Karl; Spearville.
- *Fish, Lillian Virginia; Lawrence.
- *Frankforther, Ethel May; Lawrence.
- *Haines, Lucile Pearl; Lawrence.
- *Hall, Stella Gertrude; Neodesha.
- *Miller, Lester B.; Welda.
- *Ott, Gertrude; Eudora.
- *Perkins, Marguerite A.; Eudora.
- *Smith, Nellie; Horton.
- *Woolsey, Darlene Elizabeth; Lawrence.

SOPHOMORES, 11.

SPECIALS.

- *Andrews, Jennie Grace; Everest.
- *Bocker, Helen Arzelia; Solomon.
- *Dale, Olivia L.; Lawrence.
- *Davis, Edna Marie; Chanute.
- *Ellison, Leta; Lawrence.
- *Frankenburger, Josephine Todd; *El Paso, Tex.*
- *Freark, Christine; Lawrence.
- *Gillett, Delia Victoria; Burr Oak.
- *Groberty, Lewella; Dodge City.
- *Hendrickson, Berenice Elizabeth; Mankato.
- *Hungate, Charlotte; *Albia, Iowa.*
- *Huntsman, Harold Rice; *Hebron, Neb.*
- *Ketchum, Pauline; Lawrence.
- *Metsker, Sonora Tulena; Lawrence.
- *Nelson, Gladys Irene; Neodesha.
- *Nevins, Gertrude Isabel; Blue Rapids.
- *Paramore, Pearl; Larned.
- *Pittenger, Lena; Arkansas City.
- *Ragle, Florence; Iola.
- *Riddle, Dorothy; Herington.
- *Roberts, Edna May; Greensburg.
- *Roebke, Doris Pauline; Holton.
- *Smith, Mrs. Dan Everett.
- *Stout, Bessie; Cherryvale.
- *Stout, Grace Marie; Cherryvale.
- *Trump, Maybelle Lucile; Formoso.
- *Watson, Neva; Minneapolis.
- *Woelk, Eda Louise; Russell.

SPECIALS, 28.

SUMMER SESSION.

*Also in current session.

- Abel, Barbara; *Chicago, Ill.*
History, English.
- *Abel, Clara Mildred; Lawrence.
Education, Mathematics.
- Abraham, Louis J.; Rosalia.
Engineering.
- Ahlstedt, Elmer; Lindsborg.
Education, Sociology.
- *Albaugh, Houghton S.; Topeka.
Medicine.
- *Allen, Frances; Lawrence.
Piano.
- *Allvine, Glendon; Kansas City.
Economics, Botany, Philosophy.
- Alsop, Florence May; Wakefield.
Zoology, Botany, Mathematics.
- *Amos, Thyrsa W.; Lawrence.
Education, Medicine, Philosophy.
- Anderson, Mrs. A. J.; Lawrence.
Piano.
- Anderson, Bert; Ottawa.
Zoology.
- *Anderson, Forrest Nelson; Lawrence.
Entomology.
- *Anderson, Zella May; Lawrence.
Education, English, Zoology.
- Angevine, Montfort E.; Lawrence.
Engineering.
- *Appel, Helmer George; Lawrence.
Zoology.
- Armstrong, Margaret; Lawrence.
Piano.
- Armstrong, Walter Guy; Meade.
Education, Physics.
- Arnett, Wilma; Lawrence.
Education, Spanish.
- Arnett, Wilma; Lawrence.
Psychology, Education.
- *Ashton, Annette; Lawrence.
Chemistry.
- Ashton, Madeline; Lawrence.
Spanish.
- *Atkinson, Lila; Lawrence.
Education, Botany.
- Atwood, Carrie; Lawrence.
German, Physical Education.
- *Atwood, C. Clarence; Gardner.
History, Botany, Philosophy, Psychology.
- Axton, Clayton Arthur; Cherryvale.
Education, Mathematics.
- Axton, Eddy Ray; Cherryvale.
Geology, Sociology.
- Babb, Wm. E.; Girard.
Sociology.
- Baer, Carl T.; Moundridge.
Engineering.
- Baker, H. Violet; Topeka.
History, Zoology, Sociology.
- Baker, W. W.; Harper.
Education.
- Baldwin, Ernest J.; Lawrence.
Chemistry.
- *Barba, Eusebio C.; Lawrence.
Law.
- Barber, Fred H.; Chase.
Education.
- Barnes, John R.; Kincaid.
Psychology, Education.
- Barnes, Margaret Jane; Olathe.
Education.
- *Barteldes, Elsa; Lawrence.
German, Education.
- Battaille, John F.; Lawrence.
Law.
- Batley, Lita; Lawrence.
History.
- *Baysinger, Chas E.; Hartford.
Education.
- *Beal, Mary L.; Hamilton.
Psychology.
- *Beckley, Grace; Lawrence.
Education, Home Economics,
English, Sociology.
- Beedle, Adelaide E.; Salina.
Home Economics.
- *Beeson, Marie E.; Lawrence.
Medicine.
- *Bell, Ethel D.; Osborne.
English, Sociology, Zoology.
- *Bell, Grace Adelaide; Lawrence.
Music.
- *Bell, Myra A.; Leavenworth.
Education, History, Sociology,
English, Zoology.
- Bennett, Earl Glass; Eskridge.
Philosophy, Economics.
- Bennett, Edward Earl; Stafford.
Education, English.
- Bernhard, Inez; Lawrence.
Education, German, Zoology.
- Berthot, Stephanie; Le Loup.
Astronomy, History, Zoology, Sociology.
- *Beverstock, Ruth; Lawrence.
Sociology, English, Zoology, Philosophy.
- *Bigelow, Dorothy; Oberlin.
Psychology, Education.
- *Birch, Ellis Albert; Lawrence.
Entomology.
- Bixler, E. Grace; Iola.
Spanish, Education.
- Black, Elva Marian; Ottawa.
Botany.
- Black, Pearl; Coffeyville.
English, History.
- *Blackmar, Winifred Margaret; Lawrence.
Education, Botany, Sociology.
- Blair, James S.; Lawrence.
Zoology, Philosophy.
- Blasdel, Emert Harry; Hutchinson.
Entomology.

- *Blaylock, Fred O.; De Soto.
Chemistry.
- Blunk, Belle Lorena; Lawrence.
Education.
- *Blurton, Nell Florence; Bucklin.
Education.
- Boone, W. M.; Lawrence.
Chemistry, Shop.
- *Booth, Myron M.; Hutchinson.
Physics.
- Bossi, Mary Pauline; Arkansas City.
Home Economics.
- *Bottomly, Ruth Esther; Lawrence.
Botany, Zoölogy.
- *Bowes, Joseph Leroy; Almena.
Chemistry, Economics.
- Bowlby, Alice; Natoma.
English, Drawing.
- Bowman, Henry; Lawrence.
Engineering.
- *Boyles, Bernice; Lawrence.
Mathematics, Education.
- Braden, Zella Olive; Elsmore.
Education, English, History, Sociology.
- Bradley, Aubrey J.; Blue Mound.
Education.
- *Brand, Carl August; Lawrence.
Engineering.
- Breakie, Allan Lenard; Lawrence.
Sociology, Economics,
Physical Education.
- Brewster, Florence Agnes; Thayer.
Education, German, Philosophy.
- Brigham, Dorothy L.; *Kansas City, Mo.*
Home Economics, French.
- *Brindel, Paul James; Kansas City.
Journalism, Physical Education,
Economics, Philosophy.
- Brock, F. Glenn; Oskaloosa.
Economics, English.
- *Brook, Elizabeth Cable; Lawrence.
Education.
- Brown, Lola B.; Lawrence.
Education, Philosophy.
- Brown, Marie; Lawrence.
Music.
- *Brown, Max L.; Lawrence.
Public Speaking.
- Brown, Ruth; Coffeyville.
English, History.
- Brown, Wm. Fayette; Lawrence.
Psychology, Education.
- *Brown, Wm. Rollie; Lawrence.
Engineering.
- Brune, Mayme; Lawrence.
Journalism, Education.
- Buell, Guy G.; Lawrence.
Sociology, Education, Public Speaking.
- Bunn, George P.; Humboldt.
Education.
- Bunten, Jessie Nuir; Scranton.
Education, Drawing.
- *Burke, Edmund C.; Lawrence.
Chemistry.
- *Burke, Esther Margaret; Lawrence.
Chemistry.
- *Burke, Lois; Lawrence.
Music.
- *Burkhead, Carl R.; Centerville.
Chemistry, German.
- Burns, Carrie E.; Ottawa.
Education, History.
- Burns, Martindale Edith; Great Bend.
Bacteriology.
- Burns, William Earp; Great Bend.
Bacteriology.
- *Burton, Mary Cecile; Lawrence.
History, Public Speaking, Philosophy,
Sociology.
- Caffrey, John P.; Mount Hope.
Education.
- Calbeck, John Henry; Pratt.
Chemistry.
- Caldwell, Lenore; Lecompton.
Botany.
- *Campbell, Dan S.; *Joplin, Mo.*
Law.
- *Campbell, Fred W.; Lawrence.
Geology, Engineering.
- *Carnie, Kathleen; *Kansas City, Mo.*
Botany, Sociology.
- Carpenter, Izetta Pearl; Kansas City.
Education, Botany.
- Carpenter, Wm. Weston; *Phoenix, Ariz.*
Chemistry.
- Carter, Marcia Wood; Lawrence.
Education, Zoölogy, English.
- Cavin, Alberta R.; Lawrence.
Spanish.
- *Challiss, John V. H.; Atchison.
Chemistry.
- Chance, Sylvester; Haviland.
Spanish, Education.
- Chandler, J. R.; Kincaid.
Zoölogy, Education, History.
- *Chase, Charles R.; Emporia.
Engineering.
- Chesky, Edward Joseph; Hutchinson.
Education.
- Christenson, A. Arthur; Marquette.
Law, Physical Education.
- Clark, Ruth; Overbrook.
Music.
- Clavin, Maud E.; Olathe.
Education, Geology.
- Coe, John Edwin; Leavenworth.
Bacteriology, Chemistry.
- Coe, Mabel; Topeka.
Education.
- *Coffin, Dora Belle; Baldwin.
Home Economics, Education.
- *Coffin, Jean; Lawrence.
Music.
- Coffyn, Charles Leroy; Merriam.
Engineering, Education.
- *Cohn, Byran Spencer; Lawrence.
Engineering, German.
- Colbert, Jetta Mabel; Alton.
German, Latin, Physical Education.
- *Cole, Mrs. Dorothy; Lawrence.
Education, English.
- *Cole, Stella; Lawrence.
Home Economics, Education.
- *Colt, James Dennison; Manhattan.
Medicine.
- *Compton, Allen Trimble; *Kansas City, Mo.*
Botany.
- *Constant, Olive Jane; Lawrence.
German.

- Cook, Julius Edgar; Ness City.
Geology, Astronomy,
Philosophy, Economics.
- *Cook, J. W.; Coffeyville.
Botany.
- Cook, R. Vergil; Mulberry.
Chemistry, Physics, Education.
- Cooke, Chas. Harold; Wichita.
Chemistry.
- Cope, Frank C.; Lawrence.
Journalism, Sociology.
- Corbin, Kate; *Liberty, Mo.*
German, Education, Physical Education.
- Corn, Laura E.; Humboldt.
History, Sociology.
- Cornforth, Marguerite; Lawrence.
Home Economics.
- *Cotter, James Rachel; *Kansas City, Mo.*
German, English.
- Coulter, Esther; Lawrence.
English, German, Physical Education.
- *Coyne, Kathryn; Linwood.
Mathematics, Sociology.
- Craig, Louise Harriet; Lawrence.
English.
- *Craik, Elmer LeRoy; Lawrence.
History, English.
- Crawford, Agnes; Girard.
Spanish.
- Crawford, Cornelia Humphrey; Girard.
Drawing.
- *Cromwell, Harry H.; Lawrence.
German, Botany.
- Crosley, Flossie; Wilmot.
Latin.
- Crothwait, David N.; *Kansas City, Mo.*
Chemistry.
- Crowley, Corinne Ruth; Lawrence.
Education.
- *Cruzan, Albert; Lawrence.
German, Sociology.
- *Cruzan, Evelyn; *Bethany, Mo.*
Home Economics, Education.
- Curl, Grace; Lawrence.
Education, Public Speaking,
Latin, Philosophy, Sociology.
- Curry, Katherine; Ellsworth.
Education, Sociology.
- *Curry, Ralph F.; Lawrence.
Journalism, Mathematics.
- *Curtis, Charles H.; Marion.
English, Geology.
- *Cutter, Irene; Lawrence.
Chemistry.
- Dahlene, Mildred McCurdy; Lawrence.
Education.
- Dahlene, Oscar; Lawrence.
Mathematics, Education.
- Dains, Mrs. F. B.; Lawrence.
Spanish.
- *Daniels, Ruth N.; Hiawatha.
Education, Latin.
- *Darby, Olin E.; Washington.
Entomology.
- *Daum, Frieda; Lawrence.
Education, Drawing.
- *Davis, Chauncey Milton; Lawrence.
History.
- Davis, Kathleen; Lawrence.
Botany.
- Davis, Margaret Rogers; Lawrence.
Education.
- Dawson, Helen; Great Bend.
Music.
- Day, Harry E.; Canton.
French.
- Deaver, Ray Emerson; Lawrence.
Engineering.
- Decker, Leonard E.; Lawrence.
Chemistry.
- *DeForest, Margaret May; Lawrence.
Education, Physical Education, Music.
- Dehn, Clara Eloise; Williamsburg.
German, Home Economics.
- *Deibel, Maria; Lawrence.
Mathematics, Philosophy,
Psychology, Zoölogy.
- Deibert, Olin; Lawrence.
Spanish.
- DeLashmutt, Walter F.; Baldwin City.
Botany.
- *DeMare, Adeline; Lawrence.
Psychology, French, Education.
- Deming, Beulah E.; Bonner Springs.
Geology, Philosophy.
- DeRoin, Cecil S.; White Cloud.
Education, Zoölogy, Philosophy.
- DeVine, John Randolph; Cherryvale.
Law.
- *Dicker, Mary Alice; Lawrence.
Psychology, Music.
- Dillard, Mary J.; Lawrence.
Education.
- *Diveley, Rex L.; Hutchinson.
Medicine.
- Dixon, M. Flo; Kansas City.
Education.
- Docking, Alice; Lawrence.
Music.
- Dodds, W. Hector; Lawrence.
Public Speaking, English.
- *Dolecek, Edna Helen; Lawrence.
Home Economics, Zoölogy, Sociology.
- Dotzour, Grover C.; Lyons.
Education.
- Douglass, Mrs. C. R.; St. John.
Spanish, Journalism.
- Draper, May L.; Lawrence.
Education.
- *Dresslar, Elmer L.; Mankato.
Chemistry.
- *Driskel, Kelsie E.; Lawrence.
Economics, Psychology.
- *Dryden, Lockie Louise; Larned.
Botany, English.
- Dunakin, Gladys; Lawrence.
Music.
- Duncan, Elizabeth; *Perry, Okla.*
Music.
- *Duncan, Mabel; Lawrence.
French, Spanish.
- Dunmire, Ray Allen; Lawrence.
Education.
- Durland, Dorothy; Lawrence.
Music.
- *Duttweiler, Mattie; Hartford.
Chemistry.
- *Duvall, Alice; Hutchinson.
Education.

- Dwyer, Anna; Lawrence.
Economics, Physical Education.
- *Dykes, Ada; Lebanon.
English, Education.
- Eccles, Eveline; Hutchinson.
Botany.
- *Edmonson, Ellen; Newton.
Entomology, Drawing.
- *Egan, Kyran Wm.; *Schnectady, N. Y.*
Chemistry, German.
- Ellenberger, Rush W.; Bazine.
Education, Sociology.
- Elliott, Altina; Lawrence.
Music.
- Elliott, Edward Arthur; Lawrence.
Botany, Sociology, Philosophy.
- *Ellison, Leta Maude; Lawrence.
Economics, French.
- Ellsworth, Bertha; Lawrence.
Home Economics, English,
Sociology, Philosophy.
- Emerson, Hattie L.; Chanute.
Psychology, Music.
- Emley, Pearl; Lawrence.
Music.
- *Endacott, Ruth Beatrice; Lawrence.
Bacteriology, Zoology.
- Engel, Agnes Estelle; Lawrence.
Education, German.
- *Engel, Lawrence Power; Lawrence.
Medicine.
- Erb, Paul; Hesston.
Chemistry.
- *Ewald, Paul Peter; Lawrence.
Medicine.
- Farling, Anna E.; Cherryvale.
English, Economics, Physical Education.
- Ferguson, Myrtle May; Kansas City.
Public Speaking, Physical Education.
- *Ferris, Emily; Lawrence.
Music.
- Field, Ruth Marie; Topeka.
Philosophy.
- Fink, Janet E.; Topeka.
Mathematics, English, Entomology.
- *Fish, Lillian; Lawrence.
Psychology.
- Fisk, Gladys Liggett; Spivey.
Education.
- *Fitch, Margaret Elizabeth; Lawrence.
Music.
- Fitzsimmons, Joshua Lee; Cunningham.
Education, Public Speaking.
- Fleeson, Elizabeth Helen; Sterling.
Chemistry.
- *Fogarty, John Lee; Lawrence.
Law, Economics, Sociology.
- *Fogarty, Katherine; Lawrence.
English.
- *Foster, Edward Wendell; Lawrence.
English, Music, Public Speaking.
- *Foster, Norman Macleod; Ellsworth.
Engineering.
- Foster, True Earl; Moran.
Zoology, Botany.
- *Fox, Frank H.; Lawrence.
French, Engineering.
- *Fox, Helen J.; Lawrence.
Psychology, Home Economics,
English, Sociology.
- *Frankforther, Ethel; Concordia.
Geology, Psychology, Botany.
- Fraser, Nettie May; Rydol.
Education, German.
- Freark, Winona; Lawrence.
History, Sociology.
- *Frick, Gage Carlin; *Kansas City, Mo.*
English, Mathematics, Public Speaking,
Economics, Sociology.
- Fridley, John Blaine; Lawrence.
Mathematics, Sociology, Engineering.
- Frye, Ora; Lincoln.
History.
- *Fulcrut, Vernon D.; Norton.
Psychology, History, Economics.
- *Fuller, Clinton Chas.; Peabody.
Geology, Psychology.
- *Gard, Blanche; Iola.
Education, English, Sociology.
- *Gardiner, Ruth B.; Fredonia.
Philosophy, History, Sociology,
Economics.
- Garratt, Kathryn; Eudora.
Music.
- *Garrett, Maude; Lawrence.
Economics, Physical Education.
- *Gaskill, Gussie Esther; Lawrence.
Botany, Zoology.
- Geeslin, Lydia L.; Latham.
English, Home Economics, Botany.
- Gempel, Eugene P.; Leavenworth.
Medicine, Physics.
- Gephart, Helen Louise; Lawrence.
Education.
- *Gibbens, Leon Draper; Nickerson.
Engineering, Economics, Sociology.
- Gibson, Roy S.; Winfield.
Botany, Physical Education.
- *Gibson, W. L.; Lawrence.
Chemistry.
- Giles, Ethel Margaret; Abilene.
Education.
- *Gilkesson, Murray M.; Burlingame.
Mathematics, Physical Education.
- *Gilkey, Harry Melvin; Richmond.
Medicine.
- Gillett, Wilbur G.; Kingman.
Physics.
- Gillock, Pearl; Fort Scott.
English, Education.
- Givin, Grace Eleanor; Emporia.
Education, Economics, Latin.
- Glover, J. A.; Mulvane.
Education, Botany.
- Godding, Frank E.; Lawrence.
Education, Public Speaking, English.
- *Goldsmith, Goldwin; Lawrence.
History, Philosophy.
- Goldsworthy, Maude Edith; Severy.
Botany, Home Economics.
- Goldtrap, Walter A.; Lawrence.
Chemistry.
- Grady, Archie Verne; Lawrence.
Education.
- *Graff, Marie Octavia; Topeka.
Education, Mathematics,
Physical Education.
- Granger, Wayne B.; Phillipsburg.
Bacteriology, Physical Education.

- *Gray, George; Kansas City.
Entomology.
- *Grayson, Roy David; Oskaloosa.
Medicine.
Green, Edna Faye; Coffeyville.
French, Latin.
- *Green, Stanley L.; Independence.
Medicine.
- *Gregory, O. Dwight; Alton.
Philosophy, Psychology, Economics.
- *Griesa, Theodore S.; Lawrence.
Zoölogy.
- *Griffeth, Clarence Lee; Lawrence.
Spanish, Economics.
- *Griffiths, Arline; Lawrence.
Psychology, Philosophy.
Grinter, Phyllis Josephine; Lawrence.
Chemistry.
- *Groene, Everett Kenneth; Kansas City.
Entomology.
- *Grutzmacher, Hugh A.; Onaga.
Entomology.
- *Guild, Ruth; Topeka.
Education, Botany.
Gunn, Everett; Partridge.
Public Speaking.
Gurden, Wm. David; Topeka.
Chemistry.
- *Gustafson, Mary; Lawrence.
Physiology.
- *Hackney, Winston Myron; Leavenworth.
Engineering.
Hail, Ruth McAllister; Emporia.
Education, Home Economics.
Halbert, Robert N.; Bentley.
Education.
Hale, Earle Cadwill; Lawrence.
Economics, History, Sociology.
Hale, Mrs. E. C.; Lawrence.
Home Economics, Sociology, Philosophy.
Hall, Goldena Hazel; Longton.
Economics, History.
Hall, Mrs. Louise Haynes; Leavenworth.
Education, Home Economics.
Hamilton, Fred Hill; Anthony.
Psychology, Education.
Hamilton, John Wm.; Pleasanton.
Law.
- *Hangen, Eva Catherine; Wellington.
Mathematics, Philosophy,
Education, Zoölogy.
Hanson, Millie; Arkansas City.
Education, French, Mathematics.
Harding, Roy; Attica.
Journalism.
- *Hardy, Frances Mabel; Altoona.
Medicine, Physics.
Harms, E. L.; Hillsboro.
Education, Sociology.
Harrel, Chastain G.; Lawrence.
Chemistry.
Harris, Pattie Ann; Lawrence.
German.
- *Harrison, Wm. Henry; Downs.
Entomology.
- *Hart, Charlie Edward; Glade.
Spanish, Engineering.
- *Hart, George M.; Lawrence.
Entomology.
- *Hart, Pattie; Grenola.
Medicine.
Harte, Serra; *Kansas City, Mo.*
Bacteriology.
Hartman, Edna F.; Sedgwick.
Education, Sociology.
Hartsock, Robert E.; *Stillwater, Okla.*
Mathematics, Education.
- *Harvey, Randal; Topeka.
Spanish, History.
Hase, Clara Augusta; Lawrence.
Education, Psychology.
- *Hassig, Cecil Edwards; Kansas City.
Chemistry.
- Havens, Gertrude Spaulding; Lawrence.
Education, Psychology.
- *Haworth, Margaret Josephine; Lawrence.
Chemistry.
- *Haworth, Rose; Lawrence.
Music.
Heasley, Florence; Wilson.
Latin, History.
Heasley, Wilson; Lawrence.
Music.
Heaton, Florence Phoebe; Quenemo.
Music.
- *Heckert, Josiah B.; Tescott.
Law, Sociology.
Heiss, Herbert Phillip; *Aurora, Ill.*
Economics, Philosophy.
Heleker, Howard F.; Frankfort.
Economics, History, Philosophy.
- *Helmer, Sophia Bertha; Lawrence.
Botany, Home Economics.
- Hensley, James Albert; *Porterville, Cal.*
Education.
- Hershey, Bertha L.; Kechi.
Education.
- Herthel, Ruth; Claflin.
English, Mathematics.
- *Hertzler, Agnes H.; *Kansas City, Mo.*
Medicine.
- *Hettinger, John A.; Hutchinson.
Law.
Hibbs, Carl G.; *Guthrie, Okla.*
History, Economics.
Hillman, Alfred D.; Glen Elder.
Law.
Hills, Elvert R.; *Balko, Okla.*
History, Philosophy, Journalism.
Hilton, Kirk; Cottonwood Falls.
Education.
Hinesley, Edith Elizabeth; Lawrence.
Music.
Hitchcock, G. C.; Sylvan Grove.
Education, Zoölogy.
Hite, Ora Floyd; Humboldt.
Education.
- *Hoar, Florence Eckert; Lawrence.
Education.
Hoar, M. Ethel; Lawrence.
English, Education, History.
Hoff, Eliza; Lawrence.
English, French.
Hoffman, William E.; Lawrence.
Entomology.
- *Holland, Frank D.; Pleasanton.
Spanish, Engineering, Economics.

- Holland, Leroy; Lawrence.
Economics, History.
- Holloway, Katherine Stuart; Lawrence.
Chemistry.
- *Hook, Enos E.; Wichita.
History, Economics, Philosophy.
- Hooper, Thomas Henry; *Yuma, Colo.*
Education.
- Hopkins, Annie P.; Ellsworth.
Education, Journalism.
- Hopkins, Louise Marjorie; Ellsworth.
Education.
- Hornaday, Clarence C.; Lawrence.
Education, Engineering.
- Horn, Samuel Henry; *Enid, Okla.*
Education.
- *Horr, W. H.; Lawrence.
History, Botany, Zoölogy, Philosophy.
- *Hostetter, Anita Miller; Lawrence.
English, Education, History, Sociology.
- *Hostetter, Marie M.; Lawrence.
Psychology, Economics, History.
- *Houston, Blanche; Blue Rapids.
Zoölogy, Sociology.
- Houston, J. H.; Blue Rapids.
Education.
- Howard, John; *Taft, Okla.*
Sociology.
- Huffman, Chas. Albert; Belle Plaine.
Education.
- Hughes, John Francis; Chanute.
Education, History.
- Hull, Harriet May; El Dorado.
History.
- Hunter, Helen; Winfield.
English, Home Economics.
- Hunter, L. Grace; Winfield.
Education, English.
- Hunter, Lucy E.; Winfield.
English.
- *Huntington, Forrest W.; Lawrence.
Education, Botany.
- *Huntington, Mrs. Vivian B.; Lawrence.
Education, Home Economics.
- *Huntsman, Harold R.; Lawrence.
Psychology, Music.
- Hunzicker, Esther Elma; Lawrence.
Music.
- Hunzicker, L. Edna; Lawrence.
German, Education.
- Huston, Nellie G.; Belvue.
Psychology, Education.
- *Huxman, Paul Henry; Pretty Prairie.
Psychology, Education,
Economics, Philosophy.
- Hyre, Florence; Lawrence.
Education.
- Ice, Ellen; Lawrence.
History.
- Iden, Gaye, Emporia.
Botany.
- Ingalls, Frances Susan; *Birmingham, Pa.*
English, Education, Sociology.
- Ingels, Edna M.; Lawrence.
Education.
- Ingham, Harold G.; Lawrence.
Education.
- *Irvin, Roy Robert; Lawrence.
Education.
- *Ise, Frank Harold; Lawrence.
Law, Sociology, Economics.
- Jackson, Clara; Lawrence.
Education, Home Economics.
- Jaggond, Annie; Kansas City.
Spanish, Education.
- *James, William Earl; Spring Hill.
Medicine.
- Jaynes, Eva L.; Meriden.
German, Education.
- Jennings, Leonora; Winfield.
Botany, Physical Education.
- James, Jennison; *Tulsa, Okla.*
Education.
- Johns, Floyd Marion; Concordia.
Philosophy, Education.
- Johnson, A. H.; Ottawa.
Education, Public Speaking,
Sociology, Economics.
- Johnson, Chas. E.; Lawrence.
Engineering, Mathematics.
- *Johnson, Chase B.; Lawrence.
Medicine.
- Johnson, Egbert G.; Pratt.
Sociology.
- *Johnson, Gladys Mary; Concordia.
Sociology, Psychology.
- Johnson, Samuel A.; Troy.
Education, Botany.
- *Johnson, W. Scott; Lawrence.
Entomology.
- Johnston, Nelle; Towanda.
Mathematics, History, Entomology.
- Jolly, D. Eber; Osage City.
Education.
- Jones, Ethel Anna; Chanute.
Education.
- Jones, Hiram T.; Lawrence.
Medicine.
- Jones, Madge; Kansas City.
Latin, Mathematics.
- *Jones, Stanley Sherman; Lawrence.
Geology, Botany, Philosophy, Sociology.
- *Joseph, Frances Marion; Whitewater.
Psychology, Physical Education.
- Judge, Margaret; *St. Louis, Mo.*
Music.
- Kanaga, Elizabeth; Lawrence.
Education.
- *Kauder, Walter B.; Halstead.
English, Journalism,
Economics, Sociology.
- *Kehl, Charles Cyrus; Newton.
Medicine.
- Kelley, Anna; Topeka.
Education.
- Kelsey, Ermal Maude; Gardner.
English, Education.
- Kennedy, Carl P.; Lawrence.
Chemistry.
- Kennedy, Grace; Holton.
Sociology, Physical Education,
Zoölogy, Public Speaking.
- *Kennedy, Leta F.; Lawrence.
Journalism, English.
- *Kent, Isabel; Lawrence.
Mathematics.
- Keohane, Helen; Baldwin.
English, Education.

- Kernen, Bertha; Chanute.
Education.
- Kernodle, Ruth Julia; Lawrence.
Psychology, Education.
- *Ketchem, Pauline; Lawrence.
Music.
- *Kidwell, Cleo Harold; Ottawa.
Chemistry.
- Kiefner, Chas. E.; Wichita.
Mathematics, Zoölogy.
- *Kietzmann, Chas. E.; Alta Vista.
Chemistry.
- Kincaid, Flossie Winnifred; Lawrence.
Music.
- King, A. R.; Hutchinson.
Education.
- King, Rose Gertrude; Wichita.
English, Education, Public Speaking.
- Kinney, Geneve; Lawrence.
Music.
- *Klink, Frances Marian; Anthony.
Education, English, Zoölogy.
- *Knapp, Roy S.; White City.
English, Education, Economics.
- Krattli, Walter; *Kansas City, Mo.*
Education, Psychology.
- *Krehbiel, Luella Minerva; Moundridge.
Education.
- *Kreider, Charles Cottier; Lawrence.
Chemistry.
- Kryder, George B.; Lawrence.
Chemistry, Medicine.
- *LaCoss, Gertrude; Lawrence.
Education, Botany.
- *Lacy, Pearl Hazel; Lawrence.
Music.
- *LaMay, Russell; Kansas City.
Mathematics, Drawing.
- *Lamborn, Josephine Emma; Burlington.
English, Journalism.
- Landen, Elsie Marie; Lawrence.
German.
- Landrum, Claude G.; White Cloud.
Economics, Education.
- Lane, Oscar Jasper; Baldwin.
Botany.
- Laney, George Thomas; Erie.
Engineering.
- Langmade, Mildred; Oberlin.
Economics, French, Music.
- *Langmade, Salome; Oberlin.
English, Sociology, Economics,
Public Speaking.
- Laptad, Evadne M.; Lawrence.
Education, English.
- *Larimore, Ogilvie Miller; Clifton.
Sociology, Zoölogy, Botany.
- *Laslett, Howard; Lawrence.
Entomology.
- Laughlin, P. Anna; Atchison.
Education, Public Speaking, English,
Philosophy, Physical Education.
- Lawellin, Samuel J.; *Goltry, Okla.*
Botany, Geology, Chemistry.
- *Lawson, Paul Bowen; Delphos.
Entomology.
- *Leary, Ora; Kansas City.
Chemistry, Engineering.
- Lee, J. G.; Eudora.
Medicine.
- Light, Celia; Winfield.
German, English.
- Light, Grace; Lawrence.
English.
- Lillis, Abigail Lenore; Lawrence.
Botany.
- Lim, Foo Yuen; *Canton, China.*
Physics.
- *Lind, L. L.; Medicine Lodge.
Chemistry, Botany.
- Lindbergh, Bernhard W.; *Kansas City, Mo.*
Economics, Sociology.
- *Lindsey, Adrian Hobart; Lawrence.
Engineering, Economics.
- *Little, Elizabeth A.; Eureka.
Home Economics, English, Philosophy.
- *Lohrding, Edna; Coldwater.
German, English, Education.
- Lohrenz, Henry W.; Hillsboro.
Medicine.
- *Longabaugh, Cecil Mae; Lawrence.
Sociology, Education.
- *Longenecker, Harold; Lawrence.
History, Botany, Economics.
- Lorimer, Margaret Emily; Olathe.
Botany.
- Lovan, Adolphus Fletcher; Chanute.
Education.
- Lovejoy, Owen H.; *Soda Springs, Idaho.*
Botany, Spanish.
- Lowman, Margaret Jane; *Indiana, Pa.*
Zoölogy, Education.
- Lucas, Minnie M.; Lawrence.
Public Speaking.
- *Luckan, Gladys; Lawrence.
Botany, Entomology.
- Lux, Alta Marie; Topeka.
Home Economics.
- *Lynn, George; Lawrence.
Engineering.
- *Maag, Oscar Lewis; Russell.
French, Chemistry.
- Mackey, Leo J.; Frankfort.
German, History, Philosophy.
- *Mackie, Elizabeth; Lawrence.
Music.
- Maffet, Maude A.; Lawrence.
English, Education.
- Mahan, Harold S.; Whiting.
German, Psychology, Philosophy.
- *Mannix, Winnifred; Overbrook.
English, Latin, Sociology.
- Marquardt, George; Enterprise.
German, Sociology.
- *Marquis, George; Lawrence.
Medicine.
- *Marshall, George H.; Lawrence.
French, History, Education, Sociology.
- *Marshall, Hugh A.; Coffeyville.
Chemistry.
- *Marshall, John Leroy; Rosedale.
French, Engineering.
- Marshall, R. C.; Grenola.
Zoölogy, Education.
- Martin, R. Lynn; Brookville.
Chemistry.
- Masden, Eugenia; *Kansas City, Mo.*
Home Economics, Music.

- *Mason, Edward; Lawrence.
Chemistry, English, History.
- Mason, Josephine Marie; Lawrence.
Chemistry.
- Matthews, Chas. Walton; Pittsburg.
English.
- Mattoon, Edith D.; Lawrence.
Journalism.
- Means, Sam; McLouth.
Botany, Mathematics, Sociology,
Philosophy.
- *Mella, Sherwin E.; Leavenworth.
Medicine.
- Merryman, Mabel; *Hamilton, Mo.*
Latin, English.
- *Messick, Clarence Roy; Topeka.
Education, Psychology.
- *Metcalf, Earl B.; Lawrence.
Economics, Mathematics.
- Metcalf, Helen G.; Lawrence.
Journalism.
- *Metsker, Sonora; Lawrence.
History, English.
- Meyer, Fred W.; Hanover.
Education.
- Michener, John Morrison; Wichita.
Education.
- Middleton, Avis; Minneapolis.
English.
- Miles, Kate B.; Salina.
English, Latin.
- Miles, Robert C.; Lyndon.
Physics, Engineering.
- Miller, Bertha E.; McLouth.
Philosophy, Sociology.
- Miller, Berthel C.; *Chicago, Ill.*
Economics.
- *Miller, Forrest Jennings; Sabetha.
Geology.
- Miller, Mary M.; Vinland.
Education, Home Economics,
Physical Education.
- Miller, Myron C.; Anthony.
Entomology.
- Miller, Ward L.; Halstead.
Botany, Physics.
- Minckley, Loren S.; Frontenac.
Sociology, Education.
- Minger, Ethel Louise; Bern.
Journalism.
- *Mitchell, Alexander Baldwin; Lawrence.
Law.
- Mitchell, Claire Winifred; *Geuda Springs.*
English, German, Philosophy.
- Mize, Theda Pearl; Lawrence.
Education.
- *Montaldo, Lena; *Noel, Mo.*
Music.
- *Montgomery, John A.; Lawrence.
Journalism, History, Philosophy.
- Montgomery, Robert H.; *San Marcos, Tex.*
English, Mathematics, Economics,
History.
- Morrow, Elizabeth; Lawrence.
Education, History, Sociology.
- *Mowrer, Ernest R.; Lost Springs.
Journalism, Economics, History.
- Myers, Anna Groves; Lawrence.
Education.
- Myers, Warren J.; Hutchinson.
Education, Botany.
- *MacKinnon, Inez M.; Kansas City.
Education, Latin.
- *McCandless, Earl; Hutchinson.
Botany.
- *McCanles, Eva J.; Lawrence.
Drawing.
- *McCanles, Lulu L.; Lawrence.
History, English.
- McCauley, Evelyn; Hoisington.
History, Education, Zoölogy.
- McConn, Nila Byrl; Hoisington.
Education, Philosophy, Sociology,
Zoölogy.
- McConnell, Irene Maud; Wichita.
History, Sociology.
- McCormick, Josephine; St. Marys.
Education.
- McCormick, Marfa Aileen; Lawrence.
Botany.
- McCrone, Grace; Osage City.
Chemistry.
- McCullough, Ashley Melvin; Tonganoxie.
Education, Psychology.
- McDonald, Leroy Paul; Lawrence.
Education.
- *McElvain, Margaret; Hutchinson.
Education.
- *McIntee, Matthew B.; Lawrence.
Chemistry, History, Economics.
- *McKaughan, Henrietta; Lawrence.
Journalism, History, Sociology, English,
Philosophy.
- *McKean, Morton H.; Lawrence.
Botany, Education, Sociology, Zoölogy.
- McKellar, Janette L.; Jamestown.
Education, Physical Education.
- McKenzie, Viva Hazeltine; Lawrence.
Psychology, Education, English.
- McKernan, Maureen; Topeka.
Education.
- *McKinney, Helen Julia; Iola.
Education, Psychology, Sociology.
- *McKinney, Wm. Ayres; Howard.
History, English.
- McKittrick, Margaret; Wilson.
Sociology, English, Education.
- McLaughlin, Edith; Leavenworth.
German, Public Speaking, History.
- McLindon, Mary Margaret; Williamsburg.
History.
- McMeel, Bernard Francis; Meade.
Law.
- McMillen, B. L.; Minneapolis.
Chemistry.
- *McMillan, Sadie; Lawrence.
Entomology.
- *McNaught, James B.; Girard.
Botany.
- McNulty, Blanch; Coffeyville.
English, History.
- McPherson, Lula; Chetopa.
History, Sociology.
- Neal, Lucy; Lawrence.
Psychology, Public Speaking.
- Neely, Helen A.; Cimarron.
Home Economics, Botany.

- *Nelson, Allene; Lawrence.
Mathematics, Physical Education,
Philosophy, Psychology.
- *Nelson, Allene Marie; Lawrence.
Economics, French, English.
- Nelson, Blanche; Bloomington.
Botany, Physical Education.
- Nelson, Claire M.; Leavenworth.
Spanish.
- Nelson, Gladys; Lawrence.
Education, Mathematics.
- Nelson, Iril; Lawrence.
Physics.
- Nelson, Naomi Olive; Topeka.
Education.
- Nelson, Pearl; Bloomington.
Botany, Home Economics.
- Nelson, Ralph W.; Lawrence.
Sociology, Public Speaking.
- *Nelson, Raymond Ashley; Hiawatha.
Economics, French.
- *Neptune, Harold; Salina.
Medicine.
- Neuschwanger, Amanda; Bloomington.
Education.
- Newman, Carl S.; Dighton.
Chemistry, Zoology.
- Nicholson, Hodgon Ida; Lyons.
Education.
- *Noel, Sidney Q.; Glasco.
History, Botany.
- Noll, Karl; Ransom.
Law, Economics.
- Norton, Helen G.; Chanute.
English, Education.
- Nungesser, Ella; Lawrence.
Psychology.
- *O'Brien, Elizabeth D.; Lawrence.
Music.
- *O'Donnel, Frederick R.; Ellsworth.
Medicine.
- *Oechsli, Waldo Raymond; Lawrence.
Bacteriology.
- Ogg, Tressa; Ottawa.
Education, History.
- Oldridge, Mary Belle; Lawrence.
French, Education.
- Olson, Lewis; *Aurora, Ill.*
History, French, Philosophy.
- *Orelup, Katherine; Lawrence.
Physiology.
- *O'Roke, Earl C.; Lawrence.
Zoology.
- Osborne, Harry Levi; Partridge.
Education, History.
- Osterhout, Fred W.; Baldwin.
History, Economics, Physical Education.
- Ott, Fina; Onaga.
Latin, Education.
- *Ott, Gertrude; Eudora.
Entomology.
- *Pace, John David; Parsons.
Physics.
- Padgett, Earl Calvin; Greenleaf.
Bacteriology.
- *Parkinson, Hazel Emeline; Topeka.
Mathematics, Education.
- *Patrick, Ruth; Randall.
Chemistry.
- Patrie, Nettie; Washington.
History.
- Patterson, Harry Jewel; Cherryvale.
Law, Sociology.
- *Patterson, Helen M.; Victoria.
Sociology, Journalism.
- Peck, Evelyn; *Westboro, Mo.*
Home Economics, Education.
- *Pegues, Henry S.; Hutchinson.
History, Philosophy.
- Penner, Jessie Ruth; De Soto.
Public Speaking, Spanish,
Physical Education.
- Perry, Mabel; *Kansas City, Mo.*
History, English.
- *Peters, Gerald Rupert; *Independence, Mo.*
Botany, Zoology.
- Peterson, George; Jamestown.
Law.
- Petit, L. H.; *Collinsville, Okla.*
Education.
- Pickard, Bernice Gay; Lawrence.
Journalism, Education.
- Pickard, Sam; Lawrence.
Education, English.
- *Pickering, Ernest; Lawrence.
Engineering.
- *Piepenburg, Aaron L.; Lawrence.
Law.
- Pilkingtton, May; Garnett.
English, Education.
- Plowman, Ruth Anita; Mayetta.
Education.
- Poff, Grace E.; Lawrence.
Journalism.
- Pontious, Vere L.; Erie.
Botany.
- Porter, Will K.; Paola.
German, History, Philosophy.
- Potter, E. Grace; McCune.
English, History, Education.
- *Potter, Clarence Earl; McCune.
Education, History, Sociology.
- Potts, Everett O.; Olathe.
Public Speaking, Physical Education.
- *Preyer, Mary; Lawrence.
Music.
- *Price, Maude A.; Wellington.
English, Journalism, Sociology.
- *Pringle, Kenneth W.; Alma.
Law.
- Quent, Lucy M.; *Kansas City, Mo.*
French, English.
- *Querfeld, Dorothy; Lawrence.
Drawing, Physical Education.
- *Quick, Hazel Lois; Redfield.
Education.
- Raemer, Fred Wm.; Lawrence.
Chemistry, Engineering, Botany.
- *Ramsey, James Blaine; Garnett.
Chemistry, Education.
- Randolph, E. V.; Pittsburg.
Botany.
- Rankin, Roy; Hoisington.
Bacteriology.
- Rarick, Clarence E.; Osborne.
Education, Sociology.

- Ray, L. Carl; Geuda Springs.
Education, Spanish, English.
- Rearick, Anna J.; Lawrence.
Education, English, History.
- Read, Marion Harvey; Lawrence.
Journalism, Sociology, Public Speaking,
Economics, History.
- *Reedy, Howard Lester; Lawrence.
Engineering, Economics.
- Rees, Ernest C.; Girard.
Education, Sociology, Economics.
- *Reid, Elsie; Norcatur.
English, History, Public Speaking.
- Reid, Marion Clarence; Newton.
Education, Botany.
- *Rhine, Elton; Washington.
Chemistry.
- *Rice, Gladys; Lawrence.
Entomology.
- Rife, Mildred; Anthony.
Physiology, History, Zoölogy, Sociology.
- Riggs, I. B.; Muscotah.
Chemistry.
- *Riste, Rose A.; Lawrence.
Medicine, Chemistry.
- *Ritter, Henry Cecil; Hiawatha.
Economics, Spanish.
- Robbins, Meredith; Carbondale.
Physics.
- Robbins, Mrs. Ruth; Carbondale.
Home Economics, Music.
- *Roberts, Henrietta H.; Lawrence.
Music.
- Robinson, Chapman Guy; Kansas City.
Chemistry.
- *Rockey, Mildred; Lawrence.
Education, Psychology, Economics.
- *Rogers, James Boyles; Larned.
Zoölogy.
- Rogers, Ruth; Larned.
Education.
- *Rogers, Whison G.; Wellington.
Journalism.
- Rose, Harold Edward; Paola.
Economics, History.
- *Rose, Robert B.; Rosedale.
Entomology.
- Rowe, Sarah Odessa; Lawrence.
Home Economics, Psychology,
Public Speaking.
- *Rudolph, Ruth Georgia; Lawrence.
Public Speaking, French, Sociology.
- Ruhlandt, Bernice; Osawatomie.
Chemistry, Education.
- *Ruhlandt, Helen Hays; Osawatomie.
Education.
- *Rummel, Emma May; *Independence, Mo.*
Botany, Public Speaking.
- Russell, Mary Ruth; Newton.
Education.
- Saddler, Juanita J.; *Langston, Okla.*
Education, English.
- Saddler, Levi Samuel; *Langston, Okla.*
Education, English.
- Sager, Edna; *Stanberry, Mo.*
English.
- Scalpino, Wm.; Everest.
Education, Physiology.
- Scheer, George E.; Topeka.
Economics, Education.
- *Schenck, Fred G.; Burlingame.
Physics.
- Schmitt, P. N.; Oketo.
Economics, History, Education,
Philosophy.
- Schulz, Tina I.; Hillsboro.
German.
- Scoggin, Alta; Lawrence.
Music.
- *Scott, Iva; Solomon.
Botany, Education, Sociology, Zoölogy.
- Sellers, James Lee; Neosho Rapids.
History, English.
- *Sevilla, Angel; *Honduras, C. A.*
Engineering, Economics.
- *Sewell, A. T.; Garnett.
Engineering.
- Shafer, Annie Neil; Olathe.
German, Education.
- *Shanton, Lynn C.; Kensington.
Physiology, Philosophy, Economics.
- Shaver, Allison B.; Topeka.
Mathematics, Education.
- Shaw, Laurenia Mervine; Topeka.
History, Education.
- Shaw, W. F.; Kingman.
Education.
- *Shelley, Harold J.; Lawrence.
Zoölogy.
- Shelley, Velma E.; Iola.
Education, Latin.
- Shepherd, W. Mentry; Kansas City.
Public Speaking.
- *Sherman, Hal W.; Lawrence.
Medicine.
- *Shinn, Cora; Lawrence.
Chemistry.
- Shirling, Albert Elwood; *Kansas City, Mo.*
Botany, Zoölogy.
- Siever, Lecile T.; Wichita.
English, Education.
- Simpson, Jane Mary; Pratt.
German, English.
- Sims, Merl H.; Ottawa.
Education.
- Sister M. Blanche; Concordia.
German.
- Sister M. Louise; Concordia.
German.
- Sites, Mary Edith; Atwood.
Education.
- *Skourup, Wilbur N.; Colony.
Bacteriology.
- Smith, Dixey Lee; *Richmond, Mo.*
Home Economics.
- Smith, Elizabeth H.; *Kansas City, Mo.*
Home Economics, Psychology, Zoölogy,
Philosophy.
- Smith, Erma Anita; Sharon.
Education, Public Speaking, Zoölogy,
Music.
- *Smith, Errett Garrison; Delphos.
Law.
- Smith, Frank Kenneth; Ottawa.
Entomology.
- Smith, Golden; Sterling.
Education, Botany.
- *Smith, Guido E.; Colby.
Law.
- *Smith, Lucile; Lawrence.
Education, German, Entomology.

- Smith, Maude E.; *Sterling*.
Education, Mathematics.
- Smith, Otto Orville; Dodge City.
Education.
- *Smith, Polly M.; Lawrence.
Drawing, Public Speaking.
- *Smith, Roy Esmond; Winchester.
Medicine.
- Smith, Sherrill Bronson; Topeka.
English, French.
- *Smith, Walter E.; Horton.
Law.
- *Soller, Dena A.; Washington.
Education.
- *Sopher, M. Myrtle; Topeka.
Journalism, Public Speaking, Physical
Education, English.
- *Spangler, Fred LePort; Lecompton.
Engineering.
- Spence, Etta; Washington.
Psychology, English, Sociology.
- Spencer, Alice V.; Salina.
Botany, Education.
- *Spicer, Miriam Russell; Lawrence.
Education, Botany.
- Spicer, Wm. S.; Lawrence.
Medicine, Zoölogy.
- Spikes, Roswell Albert; Lawrence.
Spanish.
- Sprinkle, Lester A.; Topeka.
Engineering, English.
- *Sproull, Ralph David; Lawrence.
Law.
- Sparrier, Leo; Kingman.
Economics, Philosophy.
- Squier, Helen Rebecca; Oswego.
English, History.
- Stanton, Guy Kent; *Enid, Okla.*
Medicine, Zoölogy.
- Stark, Stutely Henry; Ozawkie.
Psychology, Education.
- Starkweather, Marie; Lawrence.
Psychology, Geology.
- *Stateler, Ernest S.; Minneola.
Chemistry.
- *Steckel, Minnie L.; Woodbine.
Geology, German, English, History.
- Steele, DeForest Clement; McPherson.
Education, History.
- *Stephens, Brooks P.; Kansas City.
Chemistry.
- *Stevenson, Harriet Maud; Lawrence.
Education, Home Economics, Sociology.
- Stillier, Chas. Mattison; Florence.
Education.
- *Stockton, Marcellus L.; Gridley.
Chemistry.
- Stokes, Bertha Joy; Welda.
Home Economics, Education.
- Stone, Sadie Melinda; Lawrence.
Education.
- Straight, Viola; El Dorado.
Mathematics, Education.
- *Strong, Evelyn; Lawrence.
Entomology, Music.
- Strowig, Mrs. Nell; Alma.
Education.
- Studer, W. J.; Atwood.
Economics, History, Journalism.
- *Suffield, L. Chas.; McPherson.
Education, English.
- Sughrue, Cecil; Dodge City.
Education, Public Speaking.
- Sughrue, Nellie; Dodge City.
English, Education.
- *Swanson, Carl A.; McPherson.
Spanish, Education.
- Swanson, Edna Elvina; Marquette.
English.
- *Swanson, John Frederick; Marquette.
Mathematics, Physics.
- *Swanson, Minnie C.; McPherson.
History, Psychology.
- Swingle, Edna L.; Lawrence.
Journalism.
- *Swingle, Wilbur W.; Lawrence.
Medicine, Zoölogy.
- Sword, Chas. G.; Reading.
Medicine.
- *Tait, John Henry; *Braymer, Mo.*
Medicine.
- Talbot, Homer; Lawrence.
Sociology.
- *Talbot, Lucille; Lawrence.
Sociology.
- Tao, Shu Moce; Lawrence.
Botany.
- Taylor, Edward H.; Ottawa.
Zoölogy.
- Teeter, Edna; Lawrence.
Spanish, Home Economics.
- *Testerman, Iva; Lawrence.
History, Education.
- Thiele, Edna B.; Washington.
Education, Psychology, Music.
- *Thomas, Chas. L.; Lawrence.
History, Education.
- Thomas, Mrs. E. A.; Quenemo.
Music.
- *Thomas, Edith Helen; Lawrence.
Education, English.
- Thomas, Ernest A.; Quenemo.
Education, Physical Education,
Mathematics.
- *Thomas, Ruth; Phillipsburg.
Education, Psychology.
- Thompson, Lenore; Kansas City.
Music.
- Thompson, Wm. Rodney; Baldwin.
Economics.
- Throckmorton, Alice; Le Roy.
Education, Sociology, Zoölogy.
- Tibbetts, Harlow E.; Blue Rapids.
Journalism.
- Tihen, Irene; Andale.
Education.
- *Todd, Ernest Alfred; Lawrence.
Chemistry.
- *Todd, Geo. Cleveland; Lawrence.
Public Speaking, Sociology.
- *Totten, Orpha M.; Beattie.
Psychology.
- Tracy, Della; *Twelve Mile, Ind.*
Latin, Education.
- Tracy, Frank D.; Kansas City.
Education, Mathematics, Sociology.
- *Treece, E. Lee; Centerville.
Bacteriology.
- *Troutman, J. Franklin; Kansas City
History, Public Speaking,
Physical Education.

- Trueblood, Asa James; La Harpe.
Botany, Physical Training.
- Turkington, Victor H.; Cherokee.
Chemistry.
- *Turner, Dora Cecile; Independence.
Psychology, Astronomy.
- Tyler, Ernest D.; Peck.
Journalism, Education, Sociology.
- *Uhls, Kenneth Benton; Overland Park.
Medicine.
- *Uhrlaub, Rudolph P.; Lawrence.
Engineering.
- *Ulrich, Elizabeth Lucile; Lawrence.
Education, Home Economics.
- Ulrich, Mabel Wegia; Lawrence.
English, Education.
- Underwood, Addie; Lawrence.
Psychology, Education.
- Unruh, Della S.; Larned.
Home Economics.
- *Upton, Mina; Rosedale.
English, Education.
- *Van Arsdale, Mary; Lawrence.
Home Economics.
- Van Dyke, Clarence O.; Kansas City.
Education.
- *Van Slyck, Willard N.; Salina.
Education, Mathematics.
- Van Vickie, Anna; Peabody.
English.
- Vaughn, Cora B.; Winfield.
English.
- *Veatch, Harry J.; Weir City.
Chemistry, French.
- Veirs, Cyrus R.; Independence.
Education.
- *Vernson, Harry; Blue Rapids.
Journalism, Botany.
- Vogel, Arthur D.; Leavenworth.
Law, Economics.
- *Voorhees, C. H.; Leavenworth.
History, Sociology.
- Wahlin, Hugo Bernard; Lindsborg.
Physics.
- Wakefield, Fay M.; White Cloud.
Psychology, Music.
- Waldron, Ella May; Topeka.
Education.
- Waldron, J. Harley; White City.
German, History, Astronomy.
- *Walling, Lulu Grace; Lawrence.
Entomology, Botany.
- *Walling, Via; Lawrence.
Entomology, History, Education.
- Walter, Alva Jay; *Newkirk, Okla.*
Education, Sociology, German,
Philosophy.
- *Walters, F. C.; Lawrence.
Chemistry, Mathematics.
- Warren, Marie; Dodge City.
Drawing, Physical Education.
- Waters, Robert J. D.; Bonner Springs.
Law.
- Watkins, Chas. Boyd; Blue Rapids.
Economics, English, Physical Education.
- Weaver, Glenn S.; Concordia.
Psychology, Education.
- Weaver, Martin L.; Hesston.
Chemistry.
- Webb, Ora L.; Lawrence.
Bacteriology.
- Wedell, Hugo T.; Lawrence.
Law.
- Weidlein, Wm. D.; Lawrence.
Chemistry.
- *Weir, O. J.; Lawrence.
Medicine, Zoölogy, Philosophy.
- Welker, Jos. E.; Lawrence.
Zoölogy.
- Wellhouse, Walter H.; Lawrence.
Entomology.
- Weltmer, Loren Edward; Smith Center.
Economics, Philosophy.
- *Weltner, Wardie Wallace; Smith Center.
Physics.
- Wengler, Bertha; Oxford.
Home Economics, Sociology.
- *West, Edward M.; Nickerson.
Sociology, Economics, Philosophy.
- West, Harry A.; Yates Center.
Medicine.
- West, Justina A.; Lawrence.
Education, English.
- West, Marion; Lawrence.
Psychology, Economics.
- Westacott, Nellie; Leon.
English, German, Philosophy.
- Westerfield, Marie; Topeka.
Sociology.
- Wetherbee, Muriel, Mrs.; Topeka.
Spanish, Zoölogy.
- Wetherbee, R. H.; Topeka.
Education.
- White, Catherine L.; Lawrence.
English, Education.
- White, Will N.; Lawrence.
Economics, Botany.
- *Whitcroft, Ruby H.; Lawrence.
Music.
- Whitlow, Cyril Melvin; Lewis.
Education, Sociology.
- Wiedemann, Louise; Lawrence.
Music.
- Wilburn, Homer V.; Kansas City.
Chemistry.
- Williams, William John; Chanute.
Education, Sociology.
- *Wilson, Allen Ditmars; Chanute.
German, History, Philosophy.
- Wilson, Hazel E.; Lawrence.
Drawing, Education.
- *Wilson, Leland A.; Chanute.
Economics, History.
- *Windsor, Grace; Lawrence.
Home Economics, English.
- Wingert, Florence M.; *Kansas City, Mo.*
German, Education.
- Wingfield, M. Beulah; Junction City.
Sociology, Astronomy, English,
Physical Education.
- Winsor, Lonzo A.; Kensington.
German, English, Education.
- Witte, Lucile; *Cushing, Okla.*
Education, Zoölogy.
- Wood, Fayette Julius; Wamego.
History, Education, Physical Education.
- *Woodruff, Regina; Lawrence.
Zoölogy, Botany.

Woodworth, Jessie Bell; Tecumseh. Home Economics, Education, Sociology.	Young, Nellie M.; Seneca. Astronomy, History, Music.
*Woody, Vernon Warren; Barnard. Chemistry.	*Young, Percy; Lawrence. Chemistry.
Woolsey, Carrie I.; Lawrence. Education.	Youngstrom, Maud C.; Fredonia. History, Psychology.
Woolsey, William E.; Formoso. Education.	Zoellner, Grace Barbara; Tonganoxie. Education, Psychology.
*Wyatt, Wiley J.; Lawrence. Engineering.	Zook, Arthur David; Wellington. Education, Psychology.
Wycoff, Glenn L.; Ellinwood. Education.	Zook, Katherine; Fort Scott. Education.
*Wyland, Emma Frances; Harlan. Botany, History.	SUMMER SESSION, 817.
Young, Clark Edgar; Sterling. Medicine.	

OTHER INSTITUTIONS.

FROM WHICH CANDIDATES FOR DEGREES WERE ADMITTED WITH
ADVANCED STANDING, 1916-'17.

<i>Institutions.</i>	<i>Candidates.</i>	<i>Institutions.</i>	<i>Candidates.</i>
Avalon College	1	Nickerson College	2
Baker University	19	Northwestern State Normal	2
Belleville College	1	Northwestern University	2
Beloit College	1	Oklahoma A. & M. College	1
Berea College	1	Oklahoma Normal	1
Bethel College	4	Oswego College	2
Butler College	1	Ottawa University	7
Christian University	1	Park College	1
Coe College	1	Phillips University	4
Colorado State Teachers' College	1	Randolph-Macon College	1
Columbia School of Expression	1	St. Joseph, Jr., College	1
Cooper College	2	St. Mary's College	1
Denver University	2	Southwestern College	8
Dillenbeck School	1	Southwestern Texas Normal	1
Drake University	3	Spearfish Normal	1
Drury College	1	Sweet Briar College	1
Emporia College	6	Tabor College	1
Euphrates College	1	Talladega College	1
Fairmount College	10	Texas A. & M. College	1
Fairmount Seminary	1	University of Arkansas	1
Fort Hays Normal	7	University of California	3
Friends University	7	University of Chicago	6
George R. Smith College	2	University of Colorado	10
Greeley, Colorado, University	1	University of Florida	1
Harvard University	1	University of Illinois	1
Haviland Academy	1	University of Indiana	1
Henry Kendall College	1	University of Iowa	1
Highland Park College	1	University of Michigan	2
Hollins College	1	University of Missouri	6
Illinois Women's College	1	University of Nebraska	3
Iowa State College	1	University of Oklahoma	5
Iowa State Teachers' College	1	University of Oregon	1
Kansas City Polytechnic Institute	9	University of the Pacific	1
Kansas City University	1	University of Tennessee	1
Kansas State Agricultural College	15	University of Texas	1
Kansas State Manual Training Normal	7	University of Washington	1
Kansas State Normal	23	University of Wisconsin	4
Kansas Wesleyan	8	Valparaiso University	2
Kingfisher College	1	Ward-Belmont School	2
Knox College	1	Warrensburg State Normal	3
Lake Forest College	1	Washburn College	22
Leland Stanford	1	Wells College	1
Lindenwood College	1	Whitman College	1
Lombard College	2	Whittier College	1
Midland College	5	William Jewell	1
Mills College	1	Yankton College	1
Miltonvale Wesleyan	1		
Missouri Wesley College	1	Candidates	293
Monmouth College	1	Institutions	97
Monticello Academy	2		
McPherson College	6		

NOTE.—Candidates for degrees, included in above tabulation, who offered credentials from two or more schools, 31.

ENROLLMENT, 1916-'17.

SCHOOLS.	Men.	Women.	Total.
THE GRADUATE SCHOOL.....	95	42	137
THE COLLEGE OF LIBERAL ARTS AND SCIENCES.....	1,073	854	1,927
Senior Class.....	120	137	257
Junior Class.....	166	155	321
Sophomore Class.....	240	199	439
Freshman Class.....	423	302	725
Specials.....	124	61	185
THE SCHOOL OF ENGINEERING.....	495	1	496
Senior Class.....	80	.....	80
Junior Class.....	79	.....	79
Sophomore Class.....	123	.....	123
Freshman Class.....	169	1	170
Specials.....	44	.....	44
THE SCHOOL OF FINE ARTS.....	33	219	252
Senior Class.....	2	16	18
Junior Class.....	.....	14	14
Sophomore Class.....	1	26	27
Freshman Class.....	8	60	68
Specials.....	22	103	125
THE SCHOOL OF LAW.....	179	1	180
Senior Class.....	46	.....	46
Middle Class.....	38	.....	38
Junior Class.....	67	1	68
Specials.....	28	.....	28
THE SCHOOL OF PHARMACY.....	56	3	59
Senior Class.....	14	2	16
Junior Class.....	25	1	26
Sophomore Class.....	11	.....	11
Freshman Class.....	3	.....	3
Specials.....	3	.....	3
THE SCHOOL OF MEDICINE.....	110	35	145
Senior Class.....	19	.....	19
Junior Class.....	17	.....	17
Sophomore Class.....	30	4	34
Freshman Class.....	44	4	48
Nurses.....	.....	27	27
THE SCHOOL OF EDUCATION.....	70	263	333
Graduates.....	14	14	28
Seniors.....	25	110	135
Juniors.....	27	105	132
Sophomores.....	3	8	11
Specials.....	1	26	26
Total enrollment, regular session.....	2,111	1,418	3,529
Names counted twice.....	181	410	591
Totals.....	1,930	1,008	2,938
THE SUMMER SESSION.....	394	423	817
Summer students in current session.....	176	142	318
Totals.....	218	281	499
Total registration, 1916-'17.....	2,148	1,289	3,437

CLASSIFICATION OF STUDENTS.

BY KANSAS COUNTIES.

Allen.....	43	Gray.....	6	Ottawa.....	34
Anderson.....	34	Greeley.....	2	Pawnee.....	17
Atchison.....	31	Greenwood.....	19	Phillips.....	5
Barber.....	8	Hamilton.....	1	Pottawatomie.....	16
Barton.....	34	Harper.....	18	Pratt.....	20
Bourbon.....	24	Harvey.....	35	Rawlins.....	7
Brown.....	35	Haskell.....	1	Reno.....	53
Butler.....	51	Jackson.....	17	Republic.....	8
Chase.....	15	Jefferson.....	29	Rice.....	20
Chautauqua.....	16	Jewell.....	42	Riley.....	5
Cherokee.....	21	Johnson.....	39	Rooks.....	6
Cheyenne.....	2	Kearny.....	3	Rush.....	4
Clark.....	11	Kingman.....	21	Russell.....	15
Clay.....	19	Kiowa.....	11	Saline.....	25
Cloud.....	26	Labette.....	24	Scott.....	3
Coffey.....	10	Lane.....	4	Sedgwick.....	76
Comanche.....	11	Leavenworth.....	68	Seward.....	6
Cowley.....	41	Lincoln.....	15	Shawnee.....	116
Crawford.....	40	Linn.....	22	Sheridan.....	3
Decatur.....	7	Logan.....	1	Sherman.....	1
Dickinson.....	42	Lyon.....	23	Smith.....	17
Doniphan.....	16	Marion.....	39	Stafford.....	19
Douglas.....	863	Marshall.....	40	Stevens.....	3
Edwards.....	6	Meade.....	23	Sumner.....	42
Elk.....	15	Miami.....	16	Thomas.....	3
Ellis.....	7	Mitchell.....	30	Trego.....	15
Ellsworth.....	14	Montgomery.....	72	Wabaunsee.....	27
Erie.....	1	Morris.....	9	Wallace.....	2
Finney.....	6	McPherson.....	39	Washington.....	25
Ford.....	22	Nemaha.....	29	Wichita.....	1
Franklin.....	23	Neosho.....	40	Wilson.....	35
Geary.....	10	Ness.....	13	Woodson.....	6
Gove.....	2	Norton.....	15	Wyandotte.....	172
Graham.....	5	Osage.....	43		
Grant.....	1	Osborne.....	29	Counties, 103.....	3,142

BY STATES.

Arkansas.....	5	Massachusetts.....	1	Pennsylvania.....	1
California.....	1	Michigan.....	1	South Dakota.....	2
Colorado.....	8	Missouri.....	173	Texas.....	6
Connecticut.....	1	Nebraska.....	1	Washington.....	1
Florida.....	1	New Jersey.....	2	Central America.....	2
Idaho.....	2	New York.....	2	Japan.....	1
Illinois.....	5	New Mexico.....	3	China.....	1
Indiana.....	3	Oklahoma.....	64		
Iowa.....	6	Oregon.....	2	Grand total.....	3,437
Kansas.....	3,142				

*A large number of students whose names appear in the catalogue as residents of Douglas county are so catalogued because they temporarily reside in Lawrence for the purpose of attending the University.

Table of Graduates, University of Kansas, 1872-1916.

	Graduate School.		College.		Engi- neer- ing.		Law.		Pharmacy.		Fine Arts.		Medicine.		Education.		Normal depart- ment.		Total de- grees grant- ed.	Duplicate degrees.	
	M.	W.	M.	W.	M.	W.	M.	W.	M.	W.	M.	W.	M.	W.	M.	W.	M.	W.		M.	W.
1873.....																			4	2	
'74.....																			3	1	
'75.....																			7	4	
'76.....	1	1																	10	5	1
'77.....																			23	5	
'78.....	2	1																	6		
'79.....	1	8																	18	5	
1880.....	1	6																	31	6	1
'81.....	2	10																	34	11	
'82.....	2	7																	21	3	
'83.....	1	12																	26	6	
'84.....	3	11																	41	12	
'85.....	2	12																	53	11	
'86.....	1	15																	41	6	
'87.....	2	18																	39	11	
'88.....	3	22																	57	13	
'89.....	4	10																	64	16	
1890.....	3	13																	54	3	
'91.....	8	21																	64	6	
'92.....	6	17																	58	4	
'93.....	10	29																	83	4	
'94.....	6	33																	119	10	
'95.....	6	31																	112	5	
'96.....	3	39																	135	8	
'97.....	8	34																	128	15	
'98.....	9	43																	178	13	
'99.....	9	49																	173	12	
1900.....	10	51																	197	12	
'01.....	6	53																	826	19	
'02.....	9	54																	182	17	
'03.....	13	52																	208	18	
'04.....	10	48																	197	7	
'05.....	12	46																	208	13	
'06.....	10	36																	188	6	
'07.....	15	47																	272	4	
'08.....	18	51																	251	13	
'09.....	17	50																	278	19	
'10.....	21	8																	293	18	
1910.....	35	11																	349	18	
'11.....	30	17																	567	15	
'12.....	37	18																	87	8	
'13.....	36	37																	406	28	
'14.....	40	29																	449	32	
'15.....	44	31																	428	20	
'16.....																			415	25	
Totals.....	451	255	1,539	1,582	733	1,247	18	425	38	11	223	203	10	16	15	32	56	6,879	480	290	

SUMMARY.

Total number of degrees granted.....	6,854
Degrees granted to men.....	4,657
Duplicate degrees.....	480
Number of men receiving degrees.....	4,177
Degrees granted to women.....	2,197
Duplicate degrees.....	290
Number of women receiving degrees.....	1,907
Total number of persons graduated.....	6,084
Number of men deceased.....	240
Number of women deceased.....	97
Total number deceased.....	337
Number of men graduates living.....	3,937
Number of women graduates living.....	1,810
Total number of graduates living.....	5,747
Number of honorary degrees not included above.....	9

DISTRIBUTION OF ALUMNI.

Alabama.....	5	Nebraska.....	59	Alaska.....	4
Arizona.....	22	Nevada.....	4	Bulgaria.....	1
Arkansas.....	27	New Hampshire.....	3	Burma.....	1
California.....	141	New Jersey.....	22	Central America.....	3
Colorado.....	115	New Mexico.....	28	Canada.....	12
Connecticut.....	13	New York.....	114	China.....	8
Delaware.....	2	North Carolina.....	3	Cuba.....	4
District of Columbia.....	37	North Dakota.....	11	England.....	4
Florida.....	26	Ohio.....	31	France.....	1
Georgia.....	2	Oklahoma.....	134	Germany.....	2
Idaho.....	37	Oregon.....	36	Hawaii.....	1
Illinois.....	86	Pennsylvania.....	35	India.....	3
Indiana.....	25	Rhode Island.....	5	Italy.....	2
Iowa.....	36	South Carolina.....	1	Japan.....	7
Kansas.....	3,554	South Dakota.....	7	Korea.....	3
Kentucky.....	6	Tennessee.....	6	Mexico.....	6
Louisiana.....	13	Texas.....	47	Philippine Islands.....	29
Maine.....	0	Utah.....	28	Scotland.....	1
Maryland.....	7	Vermont.....	2	South America.....	10
Massachusetts.....	50	Virginia.....	9	Tasmania.....	1
Michigan.....	19	Washington.....	88	Turkey.....	1
Minnesota.....	24	West Virginia.....	4	Address unknown.....	146
Mississippi.....	4	Wisconsin.....	26		
Missouri.....	523	Wyoming.....	17		
Montana.....	42	Africa.....	1		
				Total.....	5,802

OCCUPATIONS OF ALUMNI.

WOMEN.

Educational work:	
Teaching in universities or colleges.....	56
Teaching in secondary schools.....	498
Teaching music.....	67
Farming.....	7
Home makers, married.....	483
Library work.....	18
Medicine.....	15
Office work.....	22
Pharmacy.....	12
Religious work.....	18
Social service work.....	13
Study.....	22
Home makers, unmarried.....	375
Writing or editing.....	9
Miscellaneous occupations.....	85
Occupations unknown.....	101
Total.....	1,823

MEN.

Advertising business.....	10
Banking and investments.....	66
Chemists.....	31
Educational work:	
Teachers or administrators in universities or colleges.....	209
Superintendents, principals of schools.....	92
Teachers in secondary schools.....	121
Teaching music.....	10
Engineering.....	547
Farming.....	89
Government service.....	38
Insurance business.....	30
Law.....	877
Manufacturing.....	11
Medicine.....	342
Mercantile business.....	151
Office holding—county, state, judicial.....	45
Pharmacy.....	325
Railway business.....	23
Real estate business.....	31
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Occupations unknown.....	440
Total.....	3,979

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1917-1918

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- I. General Information.**
- II. Graduate School.**
- III. College of Liberal Arts and Sciences.**
- IV. Engineering School.**
- V. School of Fine Arts.**
- VI. School of Law.**
- VII. School of Pharmacy.**
- VIII. School of Medicine.**
- IX. School of Education.**
- X. Summer Session Division.**
- XI. Extension Division.**
- XII. The Divisions of Athletics, Libraries, Museums, Publications, State Service Work, University Surveys.**
- XIII. Register of Degrees conferred and students in residence during the year.**

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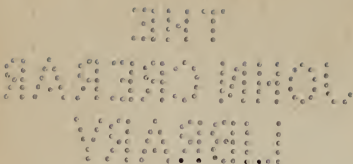
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LAWRENCE

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BOARD OF ADMINISTRATION.

Educational, Charitable, and Correctional Institutions.

MEMBERS.

ARTHUR CAPPER, GOVERNOR,
Ex officio Chairman.

E. W. HOCH.

C. W. GREEN.

WILBUR N. MASON.

JAS. A. KIMBALL, BUSINESS MANAGER.

UNIVERSITY CALENDAR.

Academic Year, 1917-'18.

January 5, Saturday—Close of Christmas recess.
January 28 to February 1, Monday to Friday, inclusive—Semester examinations.
February 4, Monday—Beginning of second semester; enrollment in classes.
February 5, Tuesday—Beginning of class work in all departments.
February 12, Tuesday, Lincoln's birthday—Legal holiday.
February 22, Friday, Washington's birthday—Legal holiday.
March 29 to April 1, Friday to Monday, inclusive—Easter recess.
April 8, Monday—Beginning of second half-semester.
May 27 to 31, Monday to Friday, inclusive—Semester examinations.
June 2, Sunday, 8 p. m.—Baccalaureate sermon.
June 3, Monday, 10 a. m.—Commencement exercises.
June 4, Tuesday—Beginning of Summer Session.

Academic Year, 1918-'19.

September 16, 17, 18, Monday, Tuesday, Wednesday—Entrance examinations and registration.
September 17, 18, Tuesday, Wednesday—Enrollment in classes.
September 19—Beginning of class work in all departments.
September 20, Friday—General assembly and annual address, at 10 a. m.
November 18, Monday—Beginning of second half-semester.
November 27 to 30, Wednesday to Saturday, inclusive—Thanksgiving recess, beginning Wednesday noon.
CHRISTMAS RECESS—Saturday, December 21, to Saturday, January 4, inclusive.
January 27 to 31, Monday to Friday, inclusive—Semester examinations.
February 3, Monday—Beginning of second semester; enrollment in classes.
February 4, Tuesday—Beginning of class work in all departments.
February 12, Tuesday, Lincoln's birthday—Legal holiday.
February 22, Friday, Washington's birthday—Legal holiday.
April 7, Monday—Beginning of second half-semester.
April 18 to 21, Friday to Monday, inclusive—Easter recess.
May 30, Thursday, Decoration Day—Legal holiday.
June 2 to 6, Monday to Friday, inclusive—Semester examinations.
June 8, Sunday, 8 p. m.—Baccalaureate sermon.
June 10, Tuesday, 10:30 a. m.—Alumni address.
June 10, Tuesday, 8 p. m.—Chancellor's reception.
June 11, Wednesday, 10 a. m.—Commencement exercises.
June 12, Thursday—Beginning of Summer Session.

CHRONOLOGICAL TABLE.

- 1855—(December). A university provided for in the first constitution of Kansas territory, at Topeka.
- 1857—(June). State University at Lawrence provided for by free-state legislature, Topeka.
- (September). Seminary of learning provided for in Lecompton constitution.
- 1858—(April). System of public instruction, including a university department, provided for in Leavenworth constitution.
- 1859—(July). State University provided for as at present, in Wyandotte constitution, now the constitution of the state of Kansas.
- 1861—Congress set apart and reserved for the use and support of a State University seventy-two sections of land.
- 1863—Lawrence selected as location for the University of Kansas.
- 1864—The University organized by the legislature.
- 1865—March 21, first meeting of the Board of Regents.
- 1866—July 19, Regents elected the first Faculty of the University, consisting of Elial Jay Rice, A. M., David Hamilton Robinson, A. M., and Francis Huntington Snow, A. M.
- North College erected.
- September 12, first session of the University opened at North College.
- 1870—Department of Engineering organized.
- 1872—Fraser Hall erected and occupied.
- 1876—Normal Department established.
- 1877—Department of Music organized.
- 1878—Department of Law organized.
- 1883—Medical Hall (old Chemistry Building) erected.
- 1885—Department of Pharmacy established.
- Normal Department discontinued.
- 1886—Snow Hall erected.
- 1891—The University reorganized; the Preparatory Department discontinued and the Schools of Arts, Engineering, Law, Fine Arts, and Pharmacy established.
- 1894—Spooners Library erected.
- Chancellor's residence erected.
- 1895—Blake Hall erected.
- 1896—The Graduate School established.
- 1899—The Fowler Shops erected.
- The School of Medicine established.
- 1900—Chemistry and Pharmacy Building erected.
- 1902—Dyche Museum of Natural History erected.
- 1903—Summer Session established.
- 1904—The name of the School of Arts changed to the College of Liberal Arts and Sciences.
- Green Hall erected.
- 1905—Full four-year course in medicine established.
- Eleanor Taylor Bell Memorial Hospital erected.
- 1906—Robinson Auditorium-Gymnasium erected.
- Clinical Laboratory erected.
- Nurses' Training School established.
- 1907—Marvin Hall erected.
- 1908—Haworth Hall erected.
- Power Plant and Laboratories erected.
- 1909—The School of Education established.
- The Division of University Extension established.
- 1911—First wing of Administration Building erected.
- State Hospital erected at Rosedale.
- Clay-working Laboratory erected.
- 1915—Dispensary at Rosedale erected.
- Oread Training School Building erected.
- 1916—Vivarium erected.

OFFICERS OF ADMINISTRATION.

THE UNIVERSITY.

FRANK STRONG, Ph. D., Chancellor.

Room 103, Fraser Hall.

Hours: 10 a. m. to 12 m. and 2 to 4 p. m.

WM. L. BURDICK, Ph. D., Vice President.

Room 206, Green Hall.

Hours: First semester, 11:30 a. m. to 12:30 p. m.; second semester, 9 to 10:30 a. m.

GEORGE O. FOSTER, A. B., Registrar.

Room 109, Fraser Hall.

Hours: 8 a. m. to 12 m. and 2 to 5 p. m.

JOHN M. SHEA, Superintendent of Buildings and Grounds.

Room 201, Repair Shop.

MRS. EUSTACE H. BROWN, Adviser of Women.

Room 114, Fraser Hall.

Hours: 9:30 to 11:30 a. m. and 2:30 to 4:30 p. m.

JOHN J. WHEELER, A. M., University Marshal.

Property Room, Robinson Gymnasium.

Hours: 10:30 to 12 m.

THE SCHOOLS.

FRANK W. BLACKMAR, Ph. D., Dean of the Graduate School.

Room 206, Administration Building.

Hours: 8 to 11 a. m.

OLIN TEMPLIN,¹ A. M., Dean of the College of Liberal Arts and Sciences.

Room 102, Fraser Hall.

Hours: 9 to 12 a. m.

D. L. PATTERSON, B. S., Assistant Dean of the College of Liberal Arts and Sciences.

Room 106, Fraser Hall.

PERLEY F. WALKER,² M. M. E., Dean of the School of Engineering.

Room 112, Marvin Hall.

Hours: 9 a. m. to 12 m.

GEORGE C. SHAAD, E. E., Acting Dean of the School of Engineering.

Room 112, Marvin Hall.

Hours: 9 to 10 a. m.

JAMES W. GREEN, A. M., Dean of the School of Law.

Room 101, Green Hall.

Hours: 9 to 10 a. m.

HAROLD L. BUTLER, A. B., Dean of the School of Fine Arts.

1406 Tennessee street.

Hours: 9 a. m. to 12 m. and 2 to 5 p. m.

1. Absent for war work.

2. Absent for military service.

CARL A. PREYER, Mus. D., Associate Dean of the School of Fine Arts.

1406 Tennessee street.

Hours: ———

LUCIUS E. SAYRE, Ph. M., Dean of the School of Pharmacy.

Room 215, Chemistry and Pharmacy Building.

Hours: 10 to 11 a. m.

SAMUEL J. CRUMBINE, M. D., Dean of the School of Medicine.

Tuesdays at Lawrence.

Wednesdays at Rosedale.

MERVIN T. SUDLER, Ph. D., Associate Dean of the School of Medicine.

Tuesdays and Saturdays at Lawrence.

Mondays, Wednesdays, Thursdays and Fridays at Rosedale.

FREDERICK J. KELLY, Ph. D., Dean of the School of Education.

Room 119, Fraser Hall.

Hours: 11 a. m. to 12 m. and 3 to 4 p. m.

THE DIVISIONS.

FREDERICK J. KELLY, Ph. D., Director of Summer Session.

Room 119, Fraser Hall.

Hours: 11 a. m. to 12 m. and 3 to 4 p. m.

FREDERICK R. HAMILTON, Ph. D., Director of University Extension.

Room 117, Fraser Hall.

Hours: 8 a. m. to 12 m. and 2 to 5 p. m.

WILLIAM O. HAMILTON, A. B., Director of Athletics.*

Room 203, Robinson Gymnasium.

Hours: 10 a. m. to 12 m.

———, Director of Libraries.

Room ———, Spooner Library.

Hours: ———

FRANK STRONG, Ph. D., *ex officio* Director of Museums.

Room 103, Fraser Hall.

Hours: 10 a. m. to 12 m. and 2 to 4 p. m.

ARTHUR T. WALKER, Ph. D., Director of University Publications.

Room 202.

Hours: 11:30 a. m.

———, Director of State Service Work.

Room ———

Hours: ———

———, Director of University Surveys.

Room ———

Hours: ———

* This division is in process of reorganization.

OFFICERS OF INSTRUCTION.

FRANK STRONG, Chancellor of the University and President of the Faculties.

A. B. Yale, 1884; A. M. Yale, 1893; Ph. D. Yale, 1897; LL. D. Oregon, Baker, Kansas Agricultural College, 1909. Lecturer in History, Yale, 1897-99; President University of Oregon, 1899-1902. Present position, 1902.

WILLIAM LIVESEY BURDICK, Vice president of the University and Professor of law.

A. B. Wesleyan, 1882; A. M. Wesleyan, 1885; Ph. D. Chattanooga, 1884; LL. B. Yale, 1898; Professor of Law, Kansas, 1898-1916. Present position, 1916.

PROFESSORS.

EPHRAIM MILLER, Emeritus Professor of Mathematics and Astronomy.

A. B. Allegheny, 1855; A. M. Allegheny, 1858; Ph. D. Allegheny, 1895. Professor of Mathematics and Astronomy, Kansas, 1874-1910.

JAMES WOODS GREEN, Dean of the School of Law and Professor of Law.

A. B. Williams, 1866; A. M. Williams, 1886. Present position, 1878.

EDGAR HENRY SUMMERFIELD BAILEY, Professor of Chemistry and Metallurgy and Director of Chemical Laboratories.

Ph. B. Yale, 1873; Ph. D. Illinois Wesleyan, 1883. Instructor in Chemistry, Yale, 1873-74; Instructor in Chemistry, Lehigh, 1874-83. Present position, 1883.

ALEXANDER MARTIN WILCOX, Professor of Greek Language and Literature.

A. B. Yale, 1877; Ph. D. Yale, 1880. Assistant in Greek, Wesleyan, 1880-83. Present position, 1885.

LUCIUS ELMER SAYRE, Dean of the School of Pharmacy, Professor of Pharmacy and Materia Medica.

Ph. G. Philadelphia College of Pharmacy, 1866; Ph. M. Philadelphia College of Pharmacy, 1896; B. S. Michigan, 1897. Instructor, Philadelphia College of Pharmacy, 1880-85. Present position, 1885.

FRANK WILSON BLACKMAR, Dean of the Graduate School and Professor of Sociology.

Ph. B. University of the Pacific, 1881; A. M. University of the Pacific, 1884; Ph. D. Johns Hopkins, 1889. Professor of Mathematics, University of the Pacific, 1882; Professor of History and Sociology, Kansas, 1889-99; Dean of the Graduate School, 1897; Professor of Sociology and Economics, Kansas, 1899-1911. Present position, 1897—

CHARLES GRAHAM DUNLAP, Professor of English Literature.

A. B. Ohio Wesleyan, 1883; A. M. Ohio Wesleyan, 1899; Litt. D. Princeton, 1892. Assistant Professor of English Literature, Kansas, 1887; Associate Professor of English Literature, Kansas, 1889. Present position, 1890.

CARL ADOLPH PREYER, Associate Dean of the School of Fine Arts and Professor of Piano and Composition.

Mus. D. Baker, 1909; Professor of Piano, Counterpoint, Canon and Fugue, Kansas, 1892-1915. Present position, 1915.

OLIN TEMPLIN,¹ Dean of the College of Liberal Arts and Sciences, and Professor of Philosophy.

A. B. Kansas, 1886; A. M. Kansas, 1890. Instructor in Mathematics, Kansas, 1884; Assistant Professor of Mathematics, Kansas, 1886; Associate Professor of Philosophy, Kansas, 1890; Professor of Philosophy, Kansas, 1892. Present position, 1903.

1. Absent for war work.

EDWIN MORTIMER HOPKINS, Professor of Rhetoric and English Language.

A. B. Princeton, 1888; A. M. Princeton, 1890; Ph. D. Princeton, 1894. Assistant Professor of English, Kansas, 1889; Associate Professor of English, Kansas, 1892. Present position, 1893.

FRANK HEYWOOD HODDER, Professor of American History and Political Science.

Ph. M. Michigan, 1883. Instructor in History and Economics, Cornell, 1885-89; Assistant Professor of Economics, 1889-90; Associate Professor of American History, 1891-93. Present position, 1893.

ERASMUS HAWORTH, Professor of Geology and Mineralogy.

B. S. Kansas, 1881; M. S. Kansas, 1884; Ph. D. Johns Hopkins, 1888. Associate Professor of Geology, Kansas, 1892. Present position, 1894.

ARTHUR TAPPAN WALKER, Professor of Latin Language and Literature, and Director of University Publications.

A. B. New York, 1887; A. M. Vanderbilt, 1892; Ph. D. Chicago, 1898. Professor of Latin and Greek, Juniata, 1888-90; Professor of Latin and Greek, Emory and Henry, 1892-93; Instructor in Latin, Chicago, 1894-97. Present position, 1897.

WILLIAM CHASE STEVENS,² Professor of Botany.

B. S. Kansas, 1885; M. S. Kansas, 1893. Assistant in Botany, 1889-92; Associate Professor of Botany, 1892-99. Present position, 1899.

ARVIN SOLOMON OLIN, Professor of Education.

A. B. Ottawa, 1882; A. M. Kansas, 1894; LL. D. Ottawa, 1915. Instructor in Pedagogy, Kansas, 1893; Associate Professor of Pedagogy, Kansas, 1894; Professor of Education, Kansas, 1899; Dean of the Summer Session, Kansas, 1913-15; Acting Dean of the School of Education, Kansas, 1913-14; Dean of the School of Education, Kansas, 1914-15. Present position, 1899.

WILLIAM ALEXANDER GRIFFITH, Professor of Drawing and Painting.

Academie Julien. Professor of Drawing and Painting, Washburn, 1893-94; Instructor in Drawing, Washington, 1895-97. Present position, 1899.

EUGENIE GALLOO, Professor of Romance Languages and Literatures.

Academie de Paris, Brevet, 1881, Sorbonne, 1884; B. L. Michigan, 1892; A. M. Kansas, 1895. Assistant Professor in French, 1892; Associate Professor in French and Spanish, 1899-1900. Present position, 1900.

CHARLES SANFORD SKILTON, Professor of Organ, Theory of Music and Music History.

A. B. Yale, 1889; Dean of the School of Fine Arts, 1903-15. Present position, 1903.

IDA HENRIETTA HYDE, Professor of Physiology.

A. B. Cornell, 1891; Ph. D. Heidelberg, 1896. Associate Professor of Physiology, Kansas, 1899. Present position, 1905.

WILLIAM HAMILTON JOHNSON, Professor of Education.

A. B. Kansas, 1885; A. M. Kansas, 1891. Professor of History and Pedagogy, Emporia State Normal, 1893-96. Present position, 1903.

JAMES NAISMITH,³ Professor of Physical Education.

A. B. McGill, 1887; M. D. Gross Medical, 1898; M. P. E. Springfield Y. M. C. A. College, 1910. Instructor, Springfield Y. M. C. A. College, 1891; Associate Professor of Physical Education, Kansas, 1898. Present position, 1908.

SAMUEL JOHN HUNTER, Professor of Entomology.

A. B. Kansas, 1893; A. M. Kansas, 1893. Assistant Professor of Entomology, Kansas, 1896; Associate Professor of Entomology, Kansas, 1899. Present position, 1906.

2. Absent on leave, first semester.

3. Absent for war work.

WILLIAM EDWARD HIGGINS,⁴ Professor of Law.

B. S. Kansas, 1888; LL. B. Kansas, 1894. Assistant Professor of Law, 1894; Associate Professor of Law, 1900. Present position, 1906.

PERLEY F. WALKER,⁵ Dean of the School of Engineering and Professor of Industrial Engineering.

B. M. E. Maine, 1896; M. E. Maine, 1900; M. M. E. Cornell, 1901. Instructor in Mechanical Engineering, Maine, 1896-1900; Professor of Mechanical Engineering, Maine, 1902-05; Professor of Mechanical Engineering, Kansas, 1905-13. Present position, 1913.

MERVIN TUBMAN SUDLER, Associate Dean of the School of Medicine, and Professor of Surgery.

B. S. Maryland Agricultural, 1894; M. S. 1897; Ph. D. Johns Hopkins, 1899; M. D. College of Physicians and Surgeons, Baltimore, 1901. Instructor in Anatomy, Johns Hopkins, 1900-02; Instructor in Anatomy and Surgery, Cornell, 1902-03; Dean of the Scientific Department, School of Medicine, Kansas, 1905-11. Present position, 1911.

L. D. HAVENHILL, Professor of Pharmacy.

Ph. C. Michigan, 1893; Ph. M. Michigan, 1894; B. S. Kansas, 1903. Assistant Professor of Pharmacy, 1899-1906; Associate Professor of Pharmacy, 1906-08. Present position, 1908.

FREDERICK EDWARD KESTER, Professor of Physics.

M. E. Ohio, 1895; A. M. Cornell, 1899; Ph. D. Cornell, 1905. Assistant in Physics, Ohio, 1895-98; Instructor in Physics, Ohio, 1899-1901; Assistant Professor of Physics, Ohio, 1901-03, 1905-07; Associate Professor of Physics, Ohio, 1907-09. Present position, 1909.

GEORGE CARL SHAAD, Acting Dean of the School of Engineering and Professor of Electrical Engineering.

B. S. Pennsylvania State, 1900; E. E. Pennsylvania State, 1905. Instructor in Electrical Engineering, Wisconsin, 1902-04; Assistant Professor of Electrical Engineering, Wisconsin, 1904-06; Assistant Professor of Electrical Engineering, Massachusetts Institute of Technology, 1906-07; Associate Professor of Electrical Engineering, Massachusetts Institute of Technology, 1907-09. Present position, 1909.

SAMUEL JAY CRUMBINE, Dean of the School of Medicine, and Professor of Preventive Medicine.

M. D. Cincinnati, 1889. Present position, 1905.

HAMILTON PERKINS CADY, Professor of Chemistry.

A. B. Kansas, 1897; Ph. D. Kansas, 1903. Assistant Professor of Chemistry, 1899-95; Associate Professor of Chemistry, 1895-1911. Present position, 1911.

DON CARLOS GUFFEY, Professor of Obstetrics and Gynecology.

B. S. Missouri, 1899; M. S. Kansas, 1908; M. D. Pennsylvania, 1905. Present position, 1914.

JOHN SUNDWALL, Professor of Anatomy.

B. S. Chicago, 1903; Ph. D. Chicago, 1906; M. D. Johns Hopkins, 1912. Assistant in Anatomy, Chicago, 1906-07; Professor of Anatomy, Utah, 1907-10. Present position, 1912.

LINDSEY STEPHEN MILNE,⁶ Professor of Medicine.

M. B., Ch. B., M. D. Edinburgh, 1908. Present position, 1912.

FREDERICK HORATIO BILLINGS,⁷ Professor of Bacteriology.

A. B. Leland Stanford, 1896; A. M. Harvard, 1897; Ph. D. Munich, 1901. Professor of Botany and Bacteriology, Louisiana, 1901-07; Associate Professor of Botany and Bacteriology, Kansas, 1907-13. Present position, 1913.

HERBERT ALLAN RICE, Professor of Mechanics and Structural Engineering.

C. E. Ohio, 1897. Instructor in Civil Engineering, Lehigh, 1902-05; Assistant Professor of Civil Engineering, Kansas, 1905-06; Associate Professor of Civil Engineering 1906-13. Present position, 1913.

4. Absent on leave.

5. Absent for military service.

6. Absent for military service.

7. Absent on leave.

BENNET MILLS ALLEN, Professor of Zoölogy.

Ph. B. De Pauw, 1898; Ph. D. Chicago, 1903. Instructor in Zoölogy, Wisconsin, 1903-08; Assistant Professor of Zoölogy, Wisconsin, 1908-13. Present position, 1913.

EDMUND HOWARD HOLLANDS, Professor of Philosophy.

Ph. B. Cornell, 1899; A. M. Cornell, 1901; Ph. D. Cornell, 1905. Instructor in Philosophy, Cornell, 1905-06; Instructor in Philosophy, Princeton, 1906-07; Instructor in Philosophy, Cornell, 1907-09; Assistant Professor of Philosophy, Hamilton, 1909-10; Professor of Philosophy, Butler, 1910-13. Present position, 1913.

HENRY WILBUR HUMELE, Professor of Law.

A. M. Cornell, 1908; LL. B. Cincinnati, 1904; J. D. Chicago, 1915. Assistant in Economics, Cornell, 1907-08; Associate Professor of Law, Kansas, 1908-13. Present position, 1913.

EDWARD DELAHAY OSEORN, Professor of Law.

Present position, 1913.

GOLDWIN GOLDSMITH, Professor of Architecture.

Ph. B. Columbia, 1896. Present position, 1913.

WILLIAM ARCH MCKEEVER, Head of Department of Child Welfare.

A. M. Kansas, 1898; Ph. M. Chicago, 1904. Professor of Philosophy, Kansas State Agricultural College, 1900-13. Present position, 1913.

FRANK BURNETT DAINS, Professor of Chemistry.

Ph. B. Connecticut Wesleyan, 1890; M. S. Wesleyan, 1891; Ph. D. Chicago, 1898. Assistant Professor of Chemistry, Northwestern, 1895-1901; Professor of Chemistry, Washburn, 1902-11; Associate Professor of Chemistry, Kansas, 1911-14. Present position, 1914.

CLEMENT CLARENCE WILLIAMS,⁸ Professor of Railway Engineering.

B. S. Southern Iowa Normal, 1900; B. S. in C. E. Illinois, 1907; C. E. Colorado, 1909. Instructor, Southern Iowa Normal, 1900-02; Instructor in Civil Engineering, Colorado, 1907-09; Assistant Professor of Civil Engineering, Colorado, 1909-14. Present position, 1914.

ELMER FRANKLIN ENGEL,⁹ Professor of German.

A. B. Kansas, 1892; A. M. Harvard, 1898. Assistant in German, Kansas, 1892; Assistant Professor of German, Kansas, 1896-1905; Associate Professor of German, Kansas, 1905. Present position, 1914.

JOHN NICHOLAS VAN DER VRIES,¹⁰ Professor of Mathematics.

A. B. Hope, 1896; A. M. Hope, 1899; Ph. D. Clark, 1901. Assistant Professor of Mathematics, Kansas, 1901-06; Associate Professor of Mathematics, Kansas, 1906-14. Present position, 1914.

WILLIAM OLIVER HAMILTON, Professor of Physical Education and Director of Athletics.

A. B. William Jewell, 1903. Physical Director, William Jewell, 1896; Assistant Professor of Physical Education, Kansas, 1912. Present position, 1914.

ARTHUR MACMURRAY, Professor of Public Speaking.

A. B. Kansas, 1896; M. O. Ott School of Expression, 1904. Professor of Public Speaking, Iowa State College, 1908-14. Present position, 1914.

FREDERICK RUTHERFORD HAMILTON, Director University Extension Division.

Ph. B. Wisconsin, 1906. Present position, 1914.

ELIZABETH CADE SPRAGUE,¹¹ Professor of Home Economics.

Graduate, Boston Normal School of Household Arts, 1898. Instructor in Home Economics, Lake Erie, 1900-01; Research Assistant, Illinois, 1901-05; Instructor in Home Economics, Chicago, 1905-13. Present position, 1914.

8. Absent for war work, second semester.

9. Absent on leave, first semester.

10. Absent for war work, second semester.

11. Absent for war work, second semester.

RALPH HERMAN MAJOR, Professor of Bacteriology and Pathology.

A. B. William Jewell, 1902; M. D. Johns Hopkins, 1910. Assistant in Medicine, 1910-12; Instructor in Pathology, Stanford, 1912-14. Present position, 1914.

WILLIAM BELL DOWNING, Professor of Voice and Public School Music.

Graduate, Drake, 1905; Professor of Voice, Highland Park, 1907-09; Instructor in Voice, Drake, 1909-13. Present position, 1914.

HERMAN OLCOTT,¹² Professor of Physical Education.

A. B. Yale, 1901. Present position, 1915.

RAPHAEL DORMAN O'LEARY, Professor of English.

A. B. Kansas, 1893; A. B. Harvard, 1895. Assistant Professor of English, Kansas, 1895-1906; Associate Professor of Rhetoric, 1906-15. Present position, 1915.

RAYMOND ALFRED SCHWEGLER, Professor of Education.

A. B. Brown, 1899; A. M. Ottawa, 1907; Associate Professor of Education, Kansas, 1907-15. Present position, 1915.

ARTHUR JEROME BOYNTON, Professor of Economics.

A. B. Harvard, 1901; A. M. Columbia, 1902. Assistant Professor of Economics, 1903-10; Associate Professor of Economics, Kansas, 1910-15. Present position, 1915.

CHARLES HAMILTON ASHTON, Professor of Mathematics.

A. B. Union, 1887; A. M. Harvard, 1893; Ph. D. Munich, 1909. Instructor in Mathematics, Harvard, 1894-1903; Assistant Professor of Mathematics, Kansas, 1903-10; Associate Professor of Mathematics, 1910-15. Present position, 1915.

ARTHUR CLARK TERRILL, Professor of Mining and Ore Dressing.

E. M. Colorado School of Mines, 1905; A. M. Columbia, 1914. Assistant Professor of Mining, Metallurgy and Geology, University of Oregon, 1906-07; Professor of Mining and Metallurgy, Oregon, 1907-08; Head of Mining Department and Professor of Metallurgy, University of Idaho, 1908-09; Assistant in Mine Surveying, Columbia University, Summer of 1914. Present position, 1915.

HAROLD LANCASTER BUTLER, Dean of the School of Fine Arts and Professor of Voice.

A. B. Valparaiso, 1894; Graduate, School of Music, Valparaiso, 1895; LL. B. Valparaiso, 1896; Graduate, Gottschalk Lyric School, Chicago, 1898; Instructor in Voice, Valparaiso, 1896-98; Director, School of Music, Valparaiso, 1899-1904; Director Vocal Department, College of Fine Arts, Syracuse, 1904-15. Present position, 1915.

ARTHUR NEVIN,¹³ Professor of Ensemble and Music Extension.

Conductor of Chorus Work, McDowell Memorial Association. Present position, 1915.

HARRY CONRAD THURNAU, Professor of Germanic Languages and Literatures.

A. B. Michigan, 1899; A. M. Michigan, 1903; Ph. D. Michigan, 1909. Instructor in German, University of Michigan, 1905-12; Associate Professor of German, Oberlin College, 1912-15. Present position, 1915.

FREDERICK JAMES KELLY, Dean of the School of Education, Director of the Summer Session and Professor of Education.

A. B. Nebraska, 1902; Ph. D. Columbia, 1914. Director of the Training School, State Normal, Spearfish, S. Dak., 1908-12; Director of the Training School, State Normal, Emporia, Kan., 1914-15. Present position, 1915.

DAVID LESLIE PATTERSON, Professor of European History and Assistant Dean of the College of Liberal Arts and Sciences.

B. S. Pennsylvania State, 1895. Instructor in History, Wisconsin, 1905-08; Associate Professor of History, Kansas, 1908-16; Acting Associate Professor of History, Wisconsin, 1914-15. Present position, 1916.

12. Absent for war work.

13. Absent for war work.

WILLIAM ASBURY WHITAKER,¹⁴ Professor of Metallurgy and Director of State Chemical Research.

Ph. B. North Carolina, 1904; A. M. Columbia, 1905. Assistant in Chemistry, North Carolina, 1903-04; Instructor in Chemistry, City of New York, 1906-11; Associate Professor of Metallurgy, 1911-16. Present position, 1916.

LEON NELSON FLINT, Professor of Journalism.

A. B. Kansas, 1897; Lecturer in Journalism, Kansas, 1906-09; Assistant Professor of Journalism, 1909-13; Associate Professor of Journalism, 1913-16. Present position, 1916.

FREDERICK HUBBARD SIBLEY, Professor of Mechanical Engineering and Director of Fowler Shops.

Ph. B. Brown, 1898; M. E. Case, 1904; Assistant Professor of Mechanical Engineering, Case, 1907; Professor of Mechanical Engineering, Alabama, 1912; Assistant Professor of Mechanical Engineering, Kansas, 1912-13; Associate Professor of Mechanical Engineering, 1913-16. Present position, 1916.

GEORGE ELLETT COGHILL, Professor of Anatomy.

A. B. Brown, 1896; M. S. New Mexico, 1899; Ph. D. Brown, 1902; Assistant Professor of Biology, New Mexico, 1899-1901; Professor of Biology, Pacific, 1902-06; Professor of Biology, Willamette, 1906-07; Professor of Zoölogy, Denison, 1907-13; Associate Professor of Anatomy, Kansas, 1913-16. Present position, 1916.

RAYMOND ASA KENT, Professor of Education.

A. B. Cornell College, 1903; A. M. Columbia, 1910; Instructor in Mathematics, State Normal School, Winona, Minn., 1909-11; Principal University High School and Assistant Professor of Education, Minnesota, 1914-16. Present position, 1916.

OLE OLUFSON STOLAND, Professor of Physiology.

A. B. South Dakota, 1905; M. S. Chicago, 1911; Ph. D. Chicago, 1913; Instructor in Biology, South Dakota, 1906-11; Assistant in Physiology, Chicago, 1911-13; Professor of Physiology, South Dakota, 1913-16. Present position, 1916.

WALTER SAMUEL HUNTER,¹⁵ Professor of Psychology.

A. B. Texas, 1910; Ph. D. Chicago, 1912. Instructor in Philosophy, Texas, 1912-14; Adjunct Professor of Psychology, Texas, 1914-16. Present position, 1916.

WILLIAM MATHEWS HEKKING, Professor of Drawing and Painting.

B. P. Syracuse, 1908; Art Students' League, New York; Academie Julien; Academie Colorossi; Instructor in Drawing, Syracuse, 1911-12; Director, School of Fine and Applied Arts, James Millikin, 1912-15; Associate in Drawing, Department of Architecture, Illinois, 1915-16. Present position, 1916.

FRANK ESTES KENDRIE, Professor of Violin and Orchestral Ensemble.

A. B. Bowdoin, 1910; A. M. Harvard, 1912. Professor of Violin, Valparaiso, 1914-17. Present position, 1917.

CLARENCE ADDISON DYKSTRA, Professor of Political Science.

A. B. Iowa, 1903. Instructor in History and Political Science, Ohio State, 1903-09; Associate Professor of History, Kansas, 1909-17. Present position, 1917.

GEORGE JUSSEN HOOD, Professor of Mechanical Drawing.

B. S. Kansas, 1902. Assistant Professor of Mechanical Drawing, Kansas, 1902-11; Associate Professor of Mechanical Drawing, 1914-17. Present position, 1917.

GEORGE BYRON ROTH, Professor of Pharmacology.

A. B. Michigan, 1906; M. D. Michigan, 1909. Instructor in Pharmacology, Michigan, 1909-13; U. S. Public Health Service, 1913-18. Present position, 1918.

CARL FERDINAND NELSON, Professor of Physiological Chemistry.

A. B. Wisconsin, 1908; A. M. Wisconsin, 1910; Ph. D. Wisconsin, 1912. Instructor in Chemistry, Iowa, 1908-11; Instructor in Chemistry, Illinois, 1912; Associate Professor of Physiological Chemistry, Kansas, 1913-17. Present position, 1917.

JACOB BLOCK, Professor of Genito-urinary Surgery.

M. D. Medical College of Ohio, 1879. Present position, 1905.

14. Absent on leave, second semester.

15. Absent for war work.

S. S. GLASSCOCK, Professor of Psychiatry.

M. D. Rush, 1887. Present position, 1905.

JOSEPH S. SAWTELL, Professor of Otorhinolaryngology.

M. D. College of Physicians and Surgeons, Baltimore, 1886. Present position, 1905.

ISADORE JULIUS WOLF, Professor of Internal Medicine.

M. D. Munich, 1887. Present position, 1905.

FRANKLIN E. MURPHY, Professor of Clinical Medicine.

M. D. Pennsylvania, 1893. Present position, 1907.

LYMAN L. UHLS, Professor of Psychiatry.

M. D. Rush, 1884. Present position, 1911.

ZACHARIAH NASON, Professor of Clinical Obstetrics.

M. D. College of Physicians and Surgeons, Baltimore, 1888. Present position, 1912.

EDWARD JAMES CURRAN, Professor of Ophthalmology.

M. D. Harvard, 1908; D. Ophth. Oxon, 1910. Present position, 1913.

PETER THOMAS BOHAN, Professor of Clinical Medicine.

M. D. Rush, 1900. Instructor in Internal Medicine, 1905. Present position, 1914.

GEORGE M. GRAY,¹⁶ Professor of Clinical Surgery.

M. D. Kansas City Medical, 1879; M. D. Bellvue, 1880. Present position, 1914.

WILLIAM L. MCBRIDE,¹⁷ Professor of Dermatology.

M. D. Rush, 1901. Associate Professor of Dermatology, 1905-16. Present position, 1916.

RICHARD L. SUTTON, Professor of Dermatology.

M. D. University Medical College, 1901; M. D. George Washington, 1904. Associate Professor of Dermatology, 1911-16. Present position, 1916.

ASSOCIATE PROFESSORS.

MILES WILSON STERLING, Associate Professor of Greek.

A. B. Kansas, 1883; A. M. Kansas, 1893. Assistant in Latin and Greek, Kansas, 1883-85; Assistant in Greek, 1885; Assistant Professor of Greek, Kansas, 1896-1901. Present position, 1901.

HANNAH OLIVER, Associate Professor of Latin.

A. B. Kansas, 1874; A. M. Kansas, 1888. Assistant Professor of Latin, 1890-1905. Present position, 1905.

SELDEN LINCOLN WHITCOMB, Associate Professor of English Literature.

A. B. Grinnell, 1887; A. M. Columbia, 1893. Professor of English Literature, Grinnell, 1895-1905. Present position, 1905.

MARTIN EVERETT RICE, Associate Professor of Physics and Electrical Engineering.

B. S. Kansas, 1891; M. S. Kansas, 1893. Instructor in Physics, Kansas, 1892-95; Assistant Professor of Physics, Kansas, 1895-1901. Present position, 1906.

LOUIS EUGENE SISSON, Associate Professor of Rhetoric.

A. B. Leland Stanford, 1904; A. M. Harvard, 1909. Instructor in Rhetoric, 1904-05; Assistant Professor of Rhetoric, 1905-10. Present position, 1910.

ALBERTA LINTON CORBIN,¹⁸ Associate Professor of German.

A. B. Kansas, 1893; Ph. D. Yale, 1902. Assistant Professor of German, Kansas, 1902-11. Present position, 1911.

16. Absent for military service.

17. Absent for military service.

18. Absent on leave.

WILLIAM JACOB BAUMGARTNER, Associate Professor of Zoölogy.

A. B. Kansas, 1900; A. M. Kansas, 1901. Instructor in Zoölogy, Kansas, 1904-05; Assistant Professor of Zoölogy, Kansas, 1905-13. Present position, 1913.

HENRY OTTO KRUSE, Associate Professor of German.

A. B. Kansas, 1894; A. M. Kansas, 1903. Instructor in German, Kansas, 1904-05; Assistant Professor of German, 1905-13. Present position, 1913.

CLARENCE CORY CRAWFORD, Associate Professor of European History.

A. B. Kansas, 1903; A. M. Kansas, 1904; Ph. D. Wisconsin, 1906. Assistant in History, Wisconsin, 1904-06; Instructor in History, Missouri, 1906-07; Assistant Professor of European History, Kansas, 1907-13. Present position, 1913.

EARLE WALTER MURRAY, Associate Professor of Latin.

A. B. Kansas, 1904. Assistant Professor of Latin, Kansas, 1907-13. Present position, 1913.

WILLIAM SAVAGE JOHNSON, Associate Professor of English Literature.

A. B. Yale, 1900; Ph. D. Yale, 1905. Instructor, Yale, 1905-08; Assistant Professor of English Literature, Kansas, 1908-13. Present position, 1913.

VICTOR EMANUAL HELLEBERG, Associate Professor of Sociology,

A. B. Yale, 1883; LL. B. Cincinnati, 1885. Instructor in Sociology, Chicago, 1908-10; Assistant Professor of Sociology, Kansas, 1910-13. Present position, 1913.

CHARLES ARTHUR HASKINS,¹⁹ Associate Professor of Sanitary Engineering.

B. S. Kansas, 1910. Instructor of Civil Engineering, Kansas, 1911; Assistant Professor of Civil Engineering, Kansas, 1912. Present position, 1913.

FLORENCE MARLEY BROWN, Adviser of Women.

Present position, 1914.

GEORGE OTIS FOSTER, Registrar.

A. B. Kansas, 1901. Present position, 1899.

FREDERIC NEWTON RAYMOND, Associate Professor of Rhetoric.

A. B. Kansas, 1896; A. M. Columbia, 1897. Assistant Professor of Rhetoric, Kansas, 1901-14. Present position, 1914.

MARGARET LYNN, Associate Professor of English Literature.

B. S. Tarkio, 1899; A. M. Nebraska, 1900. Assistant Professor of English Literature, Kansas, 1901-14. Present position, 1914.

ELISE NEUEN SCHWANDER, Associate Professor of Romance Languages.

A. B. Kansas, 1898; Ph. D. Yale, 1913. Assistant Professor of Romance Languages, 1905-14. Present position, 1914.

ARTHUR LESLIE OWEN, Associate Professor of Romance Languages.

A. B. Vermont, 1906; A. M. Illinois, 1909. Assistant Professor of Romance Languages, Kansas, 1910; Instructor in Romance Languages, Chicago, 1913. Present position, 1914.

HERMAN CAMP ALLEN, Associate Professor of Chemistry.

A. B. McPherson, 1904; A. M. Kansas, 1905; Ph. D. Cornell, 1912. Assistant Professor of Chemistry, 1910-14. Present position, 1914.

WILLIAM WATSON DAVIS, Associate Professor of American History.

B. S. Alabama Polytechnic Institute, 1903; M. S. Alabama Polytechnic Institute, 1904; A. M. Columbia, 1906; Ph. D. Columbia, 1913. Lecturer in History, Columbia, 1908-09; Assistant Professor of American History, Kansas, 1910-14. Present position, 1914.

WILLIAM COLEMAN MCNOWN, Associate Professor of Civil Engineering.

B. S. Wisconsin, 1903. Instructor in Civil Engineering, Cornell, 1905-07; Professor of Civil Engineering, Earlham, 1907-09; Assistant Professor of Civil Engineering, Kansas, 1913-14. Present position, 1914.

19. Absent for military service, second semester.

CHARLES ALBERT SHULL, Associate Professor of Plant Physiology and Genetics.

B. S. Chicago, 1905; Ph. D. Chicago, 1915. Assistant Professor of Biology, Transylvania, 1906-08; Professor of Biology, Transylvania, 1908-12; Assistant Professor of Botany, Kansas, 1912-15. Present position, 1915.

ULYSSES GRANT MITCHELL, Associate Professor of Mathematics.

A. B. Kansas, 1906; A. M. Kansas, 1907; Ph. D. Princeton, 1910. Instructor in Mathematics, Kansas, 1906-08; Assistant Professor of Mathematics, Kansas, 1910-15. Present position, 1915.

ALFRED HIGGINS SLUSS, Associate Professor of Mechanical Engineering.

B. S. in Mech. Eng. Illinois, 1901. Assistant Professor of Mechanical Engineering, 1908-15. Present position, 1915.

JOSEPH AUGUSTUS FARRELL, Associate Professor of Voice.

Graduate Royal Conservatory, Leipsic; Professor of Violin, Kansas, 1893-96; Professor of Voice and Violin, Kansas, 1896-1900; Instructor in Voice, Kansas, 1913-15. Present position, 1915.

FLOYD CARLTON DOCKERAY,²⁰ Associate Professor of Psychology.

A. B. Michigan, 1907; A. M. Michigan, 1909; Ph. D. Michigan, 1915. Assistant Instructor in Psychology, Michigan, 1908-09; Instructor in Psychology, Kansas, 1910-13; Assistant Professor, 1913-16. Present position, 1916.

HUBERT WILBUR NUTT, Associate Professor of Education, and Director of Oread Training School.

Ph. B. Chicago, 1914; Dean of Education, Marion Normal, 1909-12; Dean of Education, Muncie Normal, 1913-14; Assistant Professor of Education, Kansas, 1914-16. Present position, 1916.

JOSEPH GRANGER BRANDT, Associate Professor of Greek.

Ph. B. Lawrence College, 1903; Ph. D. Wisconsin, 1911. Instructor in Latin, Wisconsin, 1908-11; Carnegie Research Associate, American School of Classical Studies in Rome, 1911-12; Instructor in Latin, Wisconsin, 1912-13; Assistant Professor of Latin, Wisconsin, 1913-14; Assistant Professor of Latin and Greek, Wisconsin, 1914-15; Assistant Professor of Greek, Kansas, 1915-16. Present position, 1916.

RAYMOND FRIDMAN RICE, Associate Professor of Law.

A. B. Oberlin, 1905; LL. B. Kansas, 1908. Associate Professor of Law, Kansas, 1913-15. Present position, 1916.

NOBLE PIERCE SHERWOOD, Associate Professor of Bacteriology.

B. S. Kansas, 1905; A. M. Kansas, 1911. Instructor in Bacteriology, Kansas, 1910-13; Assistant Professor of Bacteriology, 1913-16. Present position, 1916.

ARTHUR E. HERTZLER, Associate Professor of Surgery.

M. D. Northwestern, 1894; Ph. D. Illinois Wesleyan, 1902. Present position, 1905.

HERBERT BARKER HUNGERFORD, Associate Professor of Entomology.

A. B. Kansas, 1911; A. M. Kansas, 1913. Instructor in Entomology, Kansas, 1911-13; Assistant Professor of Entomology, Kansas, 1913-17. Present position, 1917.

RALPH EMERSON CARTER, Associate Professor of Education.

Ph. B. Franklin, 1906; A. M. Chicago, 1911. Instructor in Education, Texas, 1912-13; Assistant Professor of Education, Kansas, 1913-17. Present position, 1917.

ELLIS BAGLEY STOFFER, Associate Professor of Mathematics.

A. B., A. M. Drake, 1907; Ph. D. Illinois, 1911. Assistant Professor of Mathematics, Kansas, 1914-17. Present position, 1917.

BLAINE FREE MOORE, Associate Professor of Political Science.

A. B. Kansas, 1901; A. M. Illinois, 1908; Ph. D. Columbia, 1913. Division Superintendent and Member of the Provincial Council in the Philippine Islands, 1901-06; Instructor in Government, University of Michigan, 1909-10; Assistant Professor of Political Science, George Washington University, 1910-15; Lecturer in Political Science, University of Wisconsin, 1913-14; Assistant Professor of Political Science, Kansas, 1915-17. Present position, 1917.

20. Absent for war work, second semester.

BURTON LEE WOLFE, Associate Professor of Mining.

B. S., Kansas, 1903. Principal Weir School of Mines, 1912-17. Present position, 1917.

FLORENCE BROWN SHERBON, Associate Professor of Physical Education.

Ph. B., 1892; A. M., M. D. 1904, Iowa University. Present position, 1917.

ROBERT McEWEN SCHAUFFLER, Associate Professor of Orthopedic Surgery.

A. B. Williams, 1893; M. D. Columbia, 1896. Associate Professor of Surgery, Kansas, 1905-11. Present position, 1917.

EVANGELINE DOWNEY TEETOR,* Associate Professor of Home Economics.

A. B., B. S., Wyoming, 1910; A. M. Chicago, 1913. Instructor in Home Economics, Kansas, 1913-17. Present position, 1918.

WILLIAM FREDERICK KUHN, Associate Professor of Psychiatry.

A. M. Wittenberg, 1878; M. D. Jefferson Medical, 1885. Present position, 1905.

WILLIAM KIRK TRIMBLE, Associate Professor of Clinical Pathology.

M. D. Kansas City Medical, 1900. Present position, 1905.

ANDREW L. SKOOG, Associate Professor of Neurology.

M. D. Northwestern, 1902. Present position, 1911.

WILLIAM J. V. DEACON,²¹ Associate Professor of Preventive Medicine.

Present position, 1914.

ORVAL JAMES CUNNINGHAM, Associate Professor of Surgery.

M. D. Rush, 1904. Present position, 1915.

ROBERT DOUGLAS IRLAND, Associate Professor of Obstetrics and Gynecology.

M. B. Kansas, 1909. Instructor in Obstetrics, Kansas, 1911-15; Assistant Professor of Obstetrics, 1915-17. Present position, 1917.

ASSISTANT PROFESSORS.

CHARLES MORGAN STERLING, Assistant Professor of Pharmacognosy.

A. B. Kansas, 1897. Present position, 1901.

EDWIN FISKE STIMPSON, Assistant Professor of Physics.

B. S. Kansas, 1890. Instructor in Physics, 1901-05. Present position, 1905.

CHARLES COCHRAN,²² Assistant Professor of Mechanical Drawing.

B. S. in M. E. Colorado, 1906. Present position, 1906.

FRANK EVERETT JONES,²³ Superintendent of Fowler Shops and Assistant Professor of Pattern Making and Founding.

Instructor in Carpentry and Pattern Making, 1903-06; Assistant Professor of Pattern Making and Foundry, 1906-15. Present position, 1915.

JAMES EDWARD TODD, Assistant Professor of Geology and Mineralogy.

A. B. Oberlin, 1867; M. A. Oberlin, 1870. Professor of Natural Sciences, Tabor, 1871-92; Adjunct Professor of Natural Sciences, Beloit, 1881-83; Professor of Geology and Mineralogy, South Dakota, 1892-1903. Present position, 1907.

HARRIETT GREISSINGER, Assistant Professor of Piano.

Mus. B. Kansas, 1895. Instructor in Piano, 1902-07. Present position, 1907.

* Appointed for second semester.

21. Resigned March 1, 1918.

22. Absent on leave.

23. Absent for military service.

EDWARD MAURICE BRIGGS, Officer in Military Training, and Assistant Professor of German.

A. B. Nebraska, 1904; A. M. Kansas, 1908. Instructor in German, 1906-10. Present position, 1910.

ALBERT MOREY STURTEVANT, Assistant Professor of German.

A. B. Harvard, 1899; A. M. Harvard, 1901; Ph. D. Harvard, 1905. Instructor in German, 1908-10. Present position, 1910.

GEORGE NATHANIEL WATSON, Assistant Professor of Pharmacy, in charge of Drug Laboratory.

A. B. Michigan, 1904; B. S. Michigan, 1908; Ph. C. Michigan, 1908. Instructor in Pharmacy, 1909-10. Present position, 1910.

LULU GARDNER, Assistant Professor of Rhetoric.

A. B. Kansas, 1905. Instructor in Rhetoric, Kansas, 1905-09. Present position, 1910.

CLIFFORD CAUDY YOUNG, Assistant Professor of Chemistry, and Director of State Water and Sewage Laboratory.

A. B. Kansas, 1910. Present position, 1910.

ARTHUR MITCHELL,²⁴ Assistant Professor of Philosophy.

A. B. Yale, 1894; Ph. D. Harvard, 1910. Present position, 1910.

FREDERICK A. G. COWPER,²⁵ Assistant Professor of Romance Languages.

A. B. Trinity, 1906; A. M. Trinity, 1911. Professor of Romance Languages, Drury, 1908-11. Present position, 1911.

HERBERT E. JORDAN, Assistant Professor of Mathematics.

A. B. McMaster, 1900; A. M. McMaster, 1901; Ph. D. Chicago, 1904. Instructor in Mathematics, Brandon College, 1904-06; Instructor in Mathematics and Physics, Michigan College of Mines, 1906-11. Present position, 1911.

WILLIAM REES B. ROBERTSON, Assistant Professor of Zoölogy.

A. B. Kansas, 1906; A. M. Kansas, 1907; Ph. D. Harvard, 1915. Instructor in Zoölogy, Kansas, 1907-09. Present position, 1912.

THEODORE TOWNSEND SMITH,²⁶ Assistant Professor of Physics.

A. B. Harvard, 1907; A. M. Harvard, 1908. Instructor in Physics, Kansas, 1910-13. Present position, 1913.

PAUL VANCE FARAGHER, Assistant Professor of Chemistry.

A. B. Kansas, 1909; Ph. D. Massachusetts Institute of Technology, 1913. Present position, 1913.

EDMUND DRESSER CRESSMAN, Assistant Professor of Latin.

A. B. Kansas, 1910; A. M. Kansas, 1911; Ph. D. Yale, 1913. Present position, 1913.

CHARLES HOMER TALBOT, Head of Municipal Reference Bureau.

A. B. Wisconsin, 1910. Present position, 1913.

JOHN DILLER GARVER, Assistant Professor of Mechanical Engineering.

B. S. Kansas, 1910. Instructor in Mechanical Engineering, Kansas, 1912-14. Present position, 1914.

FRANK LOGAN BROWN, Assistant Professor of Mechanics.

B. S. in C. E. Colorado, 1911. Instructor in Civil Engineering, Colorado, 1912-13. Present position, 1913.

WALTER STERRITT LONG, Assistant Professor of Chemistry, in charge of Food Laboratory.

A. B. Ohio Wesleyan, 1905; A. M. Ohio Wesleyan, 1908. Assistant in Chemistry, 1911-12. Present position, 1913.

24. Absent on leave.

25. Absent on leave.

26. Absent for war work, second semester.

NADINE NOWLIN, Assistant Professor of Zoölogy.

A. B. Kansas, 1903; A. M. Kansas, 1903. Instructor in Zoölogy, 1906-13. Present position, 1913.

ANNA LOUISE SWEENEY, Assistant Professor of Piano.

Mus. B. Kansas, 1906. Instructor, Kansas, 1909. Present position, 1914.

HERMAN DOUTHITT,²⁷ Assistant Professor of Zoölogy.

A. B. Oklahoma, 1910; A. M. Illinois, 1911. Assistant in Zoölogy, Chicago, 1912-14. Present position, 1914.

GEORGE WEATHERWORTH STRATTON, Assistant Professor of Chemistry.

A. B. Colorado, 1907; A. M. Ohio State, 1909; Ph. D. Ohio State, 1912. Instructor in Chemistry, Ohio State, 1909-12; Assistant Professor of Chemistry, Kansas, 1912-13. Present position, 1914.

HARRY ASHTON ROBERTS,²⁸ Assistant Professor of Civil Engineering.

B. S. Illinois, 1902. Present position, 1914.

JOSEPH EDWARD WELKER, Assistant Professor of Sanitary Engineering.

B. S. Clarkson School of Technology, 1913; M. of C. E. Harvard Graduate School of Applied Sciences, 1914. Present position, 1914.

WILLIAM MCGLASHAN DUFFUS, Assistant Professor of Economics.

A. B. Leland Stanford, 1910; A. M. Wisconsin, 1913. Present position, 1915.

GRACE MIRIAM CHARLES, Assistant Professor of Botany.

A. B. Oberlin, 1900; A. M. Chicago, 1905; Ph. D. Chicago, 1910. Instructor in Botany, Kansas, 1911-15. Present position, 1915.

JACOB OSCAR JONES, Assistant Professor of Hydraulics.

B. S. Kansas, 1912; M. S. Cornell, 1915. Instructor in Civil Engineering, Kansas, 1912-14. Present position, 1915.

HAROLD GREENE INGHAM, Secretary of Correspondence Study Department.

A. B. Milton, 1909. Instructor in Business Administration, Wisconsin, 1913-15. Present position, 1915.

JOSEPHINE MAY BURNHAM, Assistant Professor of English.

Ph. B. University of Chicago, 1901; Ph. D. Yale, 1910. Instructor in English, Wellesley College, 1902-12; Associate Professor of English, Wellesley College, 1912. Present position, 1915.

JOHN WAINWRIGHT EVANS,²⁹ Assistant Professor of Journalism.

A. B. Princeton, 1907. Instructor in English, University of Arkansas, 1912-15. Present position, 1915.

FRANK EDGAR MELVIN, Assistant Professor of Modern European History.

A. B. Kansas, 1906; A. M. Kansas, 1909; Ph. D. Pennsylvania, 1913. Assistant in History, Illinois, 1909-12; Lecturer in History, Pennsylvania, 1913-15; Assistant Professor of Modern European History, Cornell, 1915-16. Present position, 1916.

WILLIAM LEWIS EIKENBERRY,³⁰ Assistant Professor of Education.

B. S. Michigan, 1894. Instructor in Science, Mt. Morris College, 1894-1901; Instructor in Botany, University High School, Chicago, 1909-16; Assistant in Natural Science, Chicago, 1909-16. Present position, 1916.

FREDERICK WILLIAM BRUCKMILLER, Assistant Professor of Chemistry.

A. B. Kansas, 1912; A. M. Kansas, 1915. Instructor in Chemistry, Kansas, 1912-13; Chemist of State Water Survey, Kansas, 1913-16. Present position, 1916.

ROSE RUTH MORGAN, Assistant Professor of Rhetoric.

A. B. Kansas, 1894; A. M. Kansas, 1905. Instructor in Rhetoric, 1910-16. Present position, 1916.

27. Died October 24, 1917.

28. Absent for military service.

29. Absent on leave.

30. Absent on leave, second semester.

AMIDA STANTON, Assistant Professor of Romance Languages.

A. B. Kansas, 1904; A. M. Kansas, 1910. Instructor in Romance Languages, 1910-16. Present position, 1916.

HELEN GAILE JONES, Assistant Professor of German.

Ph. B. DePauw, 1900; A. M. Kansas, 1914. Instructor in German, Kansas, 1910-16. Present position, 1916.

JOHN JEFFERSON WHEELER, Assistant Professor of Mathematics, and University Marshal.

A. B. Indiana, 1905; A. M. Kansas, 1913. Professor of Mathematics, Friends, 1905-11; Instructor in Mathematics, Kansas, 1911-16. Present position, 1916.

LEON B. MCCARTY,³¹ Assistant Professor of Physical Education.

A. B. Ohio State, 1910; A. M. Ohio State, 1911. Instructor in Rhetoric, Kansas, 1912-16. Present position, 1916.

SOLOMON LEFSCHETZ, Assistant Professor of Mathematics.

M. E. Ecole Centrale, 1905; Ph. D. Clark, 1911. Instructor in Mathematics, Nebraska, 1911-13; Instructor in Mathematics, Kansas, 1913-16. Present position, 1916.

FRANCIS ELLIS JOHNSON, Assistant Professor of Electrical Engineering.

A. B. Wisconsin, 1906; E. E. Wisconsin, 1909. Instructor in Electrical Engineering, Rice Institute, 1912-15; Instructor in Electrical Engineering, Kansas, 1915-16. Present position, 1916.

RICHARD LEONIDAS GRIDER, Assistant Professor of Mining.

E. M. Colorado School of Mines, 1905. Instructor in Mining, University of Oregon, 1909-10; Instructor in Mining, Kansas, 1915-16. Present position, 1916.

GEORGE CLARK,³² Assistant Professor of Physical Education.

B. S. Illinois, 1916. Present position, 1916.

MANUEL CONRAD ELMER, Assistant Professor of Sociology.

B. S. Northwestern College, 1911; A. M. Illinois, 1912; Ph. D. Chicago, 1914. Professor of Economics and Sociology, Fargo College, 1914-16; Lecturer in Sociology, Minnesota, Summer, 1916. Present position, 1916.

RAYMOND CECIL MOORE, Assistant Professor of Geology and Paleontology, and State Geologist.

A. B. Denison, 1913; Ph. D. Chicago, 1916. Assistant in Geology, Chicago, 1914-16; Instructor in Geology, Chicago, 1916. Present position, 1916.

WINTHROP PERRIN HAYNES, Assistant Professor of Geology, Mineralogy, and Petrology.

A. B. Harvard, 1910; A. M. Harvard, 1912; Ph. D. Harvard, 1914. Assistant in Geology, Harvard, 1908-16; Instructor in Geology, Radcliffe, 1911-14; Instructor in Geology, Wellesley, 1914-16. Present position, 1916.

JOHN ISE, Assistant Professor of Economics.

Mus. B. Kansas, 1908; A. B. Kansas, 1910; LL. B. Kansas, 1911; A. M. Harvard, 1912; Ph. D. Harvard, 1914. Assistant in Economics, Harvard, 1912-13; Assistant Professor of Economics, Iowa State College, 1914-15; Associate Professor of Economics, Iowa State College, 1915-16. Present position, 1916.

SAMUEL ORRICK RICE, Director of Publicity and Assistant Professor of Journalism.

Present position, 1916.

MAY GARDNER, Assistant Professor of Romance Languages.

A. B. Kansas, 1897. Instructor in Romance Languages, Kansas, 1909-17. Present position, 1917.

31. Absent for military service.

32. Absent for military service.

WADE DINSMORE ALTER,³³ Assistant Professor of Astronomy.

B. S. Westminster College, 1909; M. S. University of Pittsburgh, 1910; Ph. D. California, 1916. Instructor of Physics and Astronomy, 1911-12, Assistant Professor of Physics and Astronomy, 1912-13, and Adjunct Professor of Physics and Astronomy, Alabama, 1913-14; Instructor in Astronomy, California, 1914-17. Present position, 1917.

HELEN MAUDE CLARK, Assistant Professor in Correspondence Study.

A. B. Kansas, 1903; A. M. Kansas, 1907; Ph. D. Cornell, 1910. Instructor in Correspondence Study, Kansas, 1910-17. Present position, 1917.

CLARENCE B. FRANCISCO,³⁴ Assistant Professor of Orthopedic Surgery.

M. D. Kansas, 1907. Instructor in Orthopedic Surgery, Kansas, 1905-17. Present position, 1917.

CORA EMMETT DOLBEE, Assistant Professor of English.

A. B. Kansas, 1908; A. M. Kansas, 1911. Present position, 1917.

DONALD RAY BLACK,³⁵ Assistant Professor of Pathology.

A. B. Kansas, 1914; M. D. Kansas, 1916. Interne, Bell Memorial Hospital. Present position, 1917.

SAMUEL SPINOZA CATELL, Assistant Professor of Economics and Commerce.

Universities of Amsterdam and Utrecht, 1905-09; A. M. Columbia, 1917. Present position, 1917.

MARK ANSON SMITH,³⁶ Assistant Professor of Economics and Commerce.

A. B. Dartmouth, 1910; A. M. Wisconsin, 1913. Present position, 1917.

CLARENCE ESTES, Assistant Professor of Chemistry.

B. S. in Chemical Engineering, Missouri, 1908; Chemical Engineer, Missouri, 1909; Instructor, Iowa, 1909-12. Analyst in Food Laboratory, 1914-17. Present position, 1917.

JOHN ROBINSON FRAZIER, Assistant Professor of Drawing and Painting.

Graduate Rhode Island School of Design, 1909. Instructor in Drawing, Rhode Island School of Design, 1909-12; Instructor in Drawing, Bradley Institute, 1912-17. Present position, 1917.

EDMUND VERNON GAGE, Assistant Professor of Romance Languages.

A. B. Harvard, 1899; A. M. Pennsylvania State, 1908. Instructor in Modern Languages, Washington Agricultural College, 1903-04; Instructor in Romance Languages, Pennsylvania State, 1906-14. Present position, 1917.

GORDON LAFAYETTE CRAM, Assistant Professor of Romance Languages.

A. B. (Honors) University of Toronto, 1894; A. M. Columbia University, 1904. Professor of Romance Languages, Kenyon College, 1914-15; Dickinson College, 1916-17. Present position, 1917.

FRANCIS MONTGOMERY VEATCH, Assistant Professor of Sanitary Engineering.

B. S. Kansas, 1914. Chemical Research Assistant, Kansas, 1914-16. Present position, 1917.

VAUGHN BRYANT,³⁷ Assistant Professor of Journalism.

B. S. in Journalism, University of Missouri, 1911. Instructor in Journalism, University of Texas, 1916-17.

GEORGE HERMANN DERRY, Assistant Professor of Romance Languages.

Graduate Stonyhurst College, England, 1902; Ph. D., Holy Cross, 1908. Present position, 1917.

33. Absent for military service.

34. Absent for military service.

35. Absent for military service.

36. Absent on leave, second semester.

37. Resigned January 1, 1918.

HOWARD TEMPLETON HILL,³⁸ Assistant Professor of Public Speaking.

B. S. Iowa State College, 1910. Assistant Professor of Public Speaking, Kansas, 1914-16.

MAXWELL FERGUSON, Assistant Professor of Economics and Commerce.

A. B. Harvard, 1908; A. M. Columbia, 1909; LL. B. Columbia, 1911. Instructor in Economics, Leipzig, Germany, 1911-12; Instructor in Economics, Hamilton, 1913; Instructor in Economics, Vassar, 1916-17. Present position, 1917.

ELIZABETH NOWELL SMITH,³⁹ Assistant Professor of Home Economics.

A. B. Missouri, 1909; B. S. in Home Economics, Missouri, 1910. Instructor in Home Economics, Kansas, 1912-14. Present position, 1918.

GROVER CLEVELAND LOUD,⁴⁰ Assistant Professor of Journalism.

A. B. Harvard, 1912. Instructor in English, Dartmouth, 1913-18. Present position, 1918.

JOHN G. HAYDEN,⁴¹ Assistant Professor of Surgery.

B. S. Chicago, 1902; M. D. Rush, 1904. Present position, 1909.

EDWARD PARK HALL, Assistant Professor of Otorhinolaryngology.

M. D. Ensworth Medical, 1897. Present position, 1911.

HERBERT F. VANORDEN, Assistant Professor of Gynecology and Obstetrics.

Ph. B. Yale, 1907; M. D. Johns Hopkins, 1910. Instructor in Gynecology and Obstetrics, Kansas, 1915-17. Present position, 1917.

FRANK D. DICKSON,⁴² Assistant Professor of Orthopedic Surgery.

B. S., M. D. University of Pennsylvania. Instructor in Orthopedic Surgery, Pennsylvania. Present position, 1917.

CHARLES CLAYTON DENNIE,⁴³ Assistant Professor of Dermatology.

B. S. Baker, 1908; M. D. Kansas, 1912. Present position, 1917.

INSTRUCTORS.

EUGENE SMITH, Demonstrator in Anatomy.

M. D. Rush, 1876. Present position, 1903.

LALIA VIOLA WALLING, Instructor in Physiology.

A. B., A. M. Kansas, 1907. Present position, 1908.

ESTHER WILSON, Instructor in German.

A. B. Kansas, 1901; A. M. Kansas, 1902. Present position, 1908.

ALICE WINSTON, Instructor in Rhetoric.

A. B. Chicago, 1898; A. M. Chicago, 1903. Present position, 1909.

MARIA LEVERING BENSON, Instructor in Design and Ceramics.

Graduate, Newcomb Art School. Present position, 1909.

WILLIAM B. DALTON, Instructor in Violoncello.

Present position, 1911.

NELLIE MAY STEVENSON, Instructor in Correspondence Study.

A. B. Kansas, 1907. Present position, 1911.

HEARTY EARL BROWN, Instructor in Rhetoric.

A. B. Michigan, 1909; A. M. Michigan, 1910. Present position, 1912.

38. Resigned, March 1, 1918, for military service.

39. Appointed for second semester.

40. Appointed February, 1918.

41. Absent for military service.

42. Absent for military service.

43. Absent for military service.

SARA GRANT LAIRD, Instructor in Rhetoric.

A. B. Oberlin, 1904; A. M. Columbia, 1912. Present position, 1912.

MYRTLE GREENFIELD, Bacteriologist of State Water and Sewage Laboratory.

A. B. Kansas, 1911; A. M. Kansas, 1912. Present position, 1912.

JOSEPH COLBERT MCCANLES, Instructor in Band Instruments.

B. S. Kansas Christian, 1907; LL. B. Kansas, 1909. Present position, 1910.

MAUD MILLER, Instructor in Piano.

Mus. B. Kansas, 1898. Present position, 1904.

PEARL EMLEY-ELLIOTT, Instructor in Piano and Organ.

Mus. B. Kansas, 1909; Mus. M. Kansas, 1913. Present position, 1913.

CORA IRENE REYNOLDS, Instructor in Voice.

Mus. B. Kansas, 1912. Present position, 1913.

HELEN RHODA HOOPES, Instructor in Rhetoric.

A. B. Kansas, 1913; A. M. Kansas, 1914. Present position, 1914.

CAROLINE BAUMANN SPANGLER, Instructor in German.

B. D. Kansas, 1881; A. B. Kansas, 1883. Present position, 1914.

WILLARD AUSTIN WATTLES, Instructor in Rhetoric.

A. B. Kansas, 1909; A. M. Kansas, 1911. Instructor in English, Massachusetts Agricultural College, 1911-14. Present position, 1914.

ESTHER LYDIA SWENSON, Instructor in Rhetoric.

A. B. Minnesota, 1911; A. M. Minnesota, 1914. Present position, 1914.

HAZEL KATHERINE ALLEN, Instructor in Home Economics.

Ph. B. Chicago, 1913. Present position, 1914.

CHARLES WESLEY WHITE, Instructor in Machine-shop Practice.

Present position, 1914.

HAZEL HELEN PRATT, Instructor in Physical Education.

A. B. Ohio State, 1914; Graduate, Harvard School of Physical Education, 1915. Physical Director, Western College for Women, Oxford, Ohio, 1914-15. Present position, 1915.

LAURENS ELLIS WHITEMORE,⁴⁴ Instructor in Physics.

A. B. Washburn College, 1914; A. M. Kansas, 1915. Present position, 1915.

CLIFFORD WINSLOW SEIBEL, Instructor in Chemistry.

B. S. Kansas, 1913. Present position, 1913.

OSCAR ROCKLUND, Instructor in Foundry.

Present position, 1913.

WALTER BLAINE BODENHAFFER, Instructor in Sociology.

A. B. Indiana, 1911; LL. B. Indiana, 1912; A. M. Kansas, 1915. Present position, 1915.

PETER ANTON FREDERIK APPELBOOM,⁴⁵ Instructor in Romance Languages.

Graduate, Academie Royale Maritime of Holland. Present position, February, 1915.

EVELYN FOGG OLCOTT, Instructor in Voice.

Graduate Institute of Musical Art, New York. Present position, 1916.

44. Absent for war work.

45. Absent for war work.

DONALD GILDERSLEEVE PATERSON,⁴⁶ Instructor in Psychology.

A. B. Ohio State, 1914; A. M. Ohio State, 1915. Graduate Assistant in Psychology, Ohio State, 1914-15; Laboratory Assistant in Psychology, Ohio State, 1915-16. Present position, 1916.

EARLE BRENNEMAN MILLER, Instructor in Mathematics.

A. B. Colorado, 1914; A. M. Chicago, 1916. Present position, 1916.

ARTHUR JACKSON MIX, Instructor in Plant Pathology.

A. B. Hamilton, 1910; Ph. D. Cornell University, 1916. Assistant Botanist, New York Agricultural Experiment Station, 1915-16. Present position, 1916.

NORMAN FRASER STRACHAN,⁴⁷ Instructor in Sanitary Engineering, and Assistant Engineer of the State Board of Health.

B. S. Kansas, 1915. Present position, 1916.

DANIEL DA CRUZ, Instructor in Romance Languages.

Graduate, College of Montariol, Braga, Portugal, 1901; Ph. D. Catholic University of America, 1915. Professor of Portuguese in Beira, Mozambique, 1906-08; Professor of Portuguese in College of Montariol, Braga, Portugal, 1908-10. Present position, 1916.

BERTHA MIX, Instructor in Physical Education.

A. B. Kansas, 1912. Present position, 1916.

PAUL BOWEN LAWSON, Instructor in Entomology.

A. B. Oskaloosa, 1909. Present position, 1916.

FELIPE MOLINA, Instructor in Romance Languages.

B. L. Nicaragua. Professor of Philosophy, Colegio de Señoritas, San José, Costa Rica, 1913; Professor of History, Colegio, Cartago, Costa Rica, 1914-15; Professor of English and History in the Institute Nacional, Alajuela, Costa Rica, 1916. Present position, 1917.

ARTHUR HERMAN HUISKEN,⁴⁸ Assistant in State Chemical Research.

B. S. University of Illinois, 1915; M. S. University of Michigan, 1916. Present position, 1917.

WILBUR WILLIS SWINGLE, Instructor in Zoölogy.

A. B. Kansas, 1915; A. M. Kansas, 1916. Present position, 1917.

EMILY VICTORIA BERGER, Instructor in Chemistry.

A. B. Kansas, 1914. Assistant Instructor in Chemistry, 1916-17. Present position, 1917.

RAY QUINCEY BREWSTER,⁴⁹ Instructor in Chemistry.

A. B. Ottawa, 1914; A. M. Kansas, 1915. Assistant Instructor in Chemistry, 1915-17. Present position, 1917.

SYBIL WOODRUFF, Instructor in Home Economics.

A. B. Kansas, 1916. Assistant Instructor in Home Economics, Kansas, 1916-17. Present position, 1917.

LAFORCE BAILEY, Instructor in Architecture.

B. S. in Architecture, Illinois, 1915; M. S. in Architecture, Illinois, 1916. Assistant Instructor in Architecture, Kansas, 1916-17. Present position, 1917.

LAWRENCE A. HARTLEY, Instructor in Shop Practice, and Acting Superintendent of Fowler Shops.

Mechanician in Fowler Shops, 1914-16. Assistant Instructor in Shop Practice, Kansas, 1916-17. Present position, 1917.

AGNES ANDERSON MURRAY, Instructor in Chemistry.

A. B. Baker, 1909; A. M. Kansas, 1911. Analyst in Food Laboratory, Kansas, 1911-15. Present position, 1917.

46. Absent for war work.

47. Absent for military service.

48. Resigned February, 1918.

49. Absent on leave.

HAZEL MACGREGOR RICE,⁵⁰ Instructor in Mathematics.

A. B. Yankton College, 1906; A. M. University of Illinois, 1909. Instructor in Mathematics, Kansas, 1911-14. Present position, 1917.

JAMES BLAINE RAMSEY, Instructor in Chemistry.

A. B. Kansas, 1916. Present position, 1917.

CLARENCE ALONZO MILLS, Instructor in Physiology.

A. B. South Dakota, 1917. Present position, 1917.

ANITA MILLER HOSTETTER, Instructor in Correspondence Study.

A. B. Kansas, 1917. Present position, 1917.

RUBY CORNELIA HOSFORD, Field Research Assistant in Entomology.

A. B. Kansas, 1909; A. M. Kansas, 1913. Assistant Instructor, Kansas, 1913-16. Present position, 1917.

ELBERT LEE TREECE, Instructor in Bacteriology.

B. S. Kansas, 1916. Present position, 1917.

CORNELIA MITCHELL DOWNS, Instructor in Bacteriology.

A. B. Kansas, 1915. Present position, 1917.

FRANK FARLEY, Research Assistant in the Division of State Chemical Research.

Present position, 1917.

ELIZABETH CAMPBELL MEGUIAR, Instructor in Home Economics.

Certificate, University of Chicago, 1910. Instructor, State College of Pennsylvania, 1910-1913, University of Chicago, 1913 (Summer), University of Texas, 1914-17. Present position, 1917.

WILLIAM ADELBERT DILL, Instructor in Journalism.

A. B. Oregon, 1908. Present position, 1917.

GERTRUDE THEOREN HAZEN, Instructor in Home Economics.

A. B. Baker, 1914, A. M. Kansas, 1915. Present position, 1917.

JOSÉ MARIA OSMA, Instructor in Romance Languages,

College des Freres des Ecoles Chretiennes, Escuela de Bellos Artes, Barcelona, Spain; Ecole des Beaux Arts and Academie Vitty, Paris. Instructor, Colegio Superior de Senoritas, 1910-1913; Colegio Superior de Senoritas y Seccion Normal, 1913-1917; Liceo de Costa Rica, 1913-1917. Present position, 1917.

HENRI TAILLIART,⁵¹ Instructor in Romance Languages.

Lycee de Reims. Instructor, Colegio de San Luis, Cartago, Costa Rica, and Instituto Nacional, Alajuela, Costa Rica.

SYLVESTER SPARKS SCHOOLEY, Instructor in Electrical Engineering.

B. S. Kansas, 1913. Present position, 1917.

HARRY ALLAN FORNEY, Instructor in Forging.

Present position, 1917.

ALDA BARBER HUNTER,* Instructor in Psychology.

A. B. Texas, 1915; A. M. Texas, 1916. Instructor in Psychology, Texas, 1916-17. Present position, 1917.

ETHEL VAUGHAN, Instructor in Correspondence Study.

A. B. Wellesley, 1904. Present position, 1917.

RUBY VERGIL COOK, Instructor in Physical Education.

B. S. in Education, Pittsburg Normal, A. B. Kansas, 1918. Present position, 1917.

50. Resigned February, 1918.

51. Resigned February, 1918.

* Appointed for first semester.

BERNARD FRANCIS JENSEN, Instructor in Physical Education.

Present position, 1917.

LOUIS JOSEPH BOURDON, Instructor in Romance Languages.

Brevet from Normal School, 1892; Lycee de Bordeaux, 1896. Instructor Forest Park University, 1915-17. Present position, 1917.

JAMES EDWARD BOND, Instructor in Physical Education.

A. B. Kansas, 1910. Present position, 1917.

BESSIE DOUTHITT, Instructor in Zoölogy.

Present position, 1917.

WILLIS HENRY BELTZ, Radio-code Instructor.

Present position, 1917.

ALFRED HENRY WIETERS, Instructor in Sanitary Engineering.

B. S. Kansas, 1917. Present position, 1917.

HUBERT SHEPPARD,* Instructor in Psychology.

A. B. Oklahoma, 1917; A. M. Oklahoma, 1917. Present position, 1918.

IDA FARAGHER,* Instructor in Psychology.

Present position, 1918.

ARTHUR WILLIAM LARSEN,* Instructor in Mathematics.

A. B. Wisconsin, 1913; A. M. Wisconsin, 1915. Assistant, Department of Mathematics, University of Wisconsin, 1914-15. Instructor in Mathematics, Kansas, 1915-17. Present position, 1917.

ETHEL ANNA JONES, Chemist, Water and Sewage Laboratory.

A. B. Kansas, 1913; A. M. Kansas, 1916. Present position, 1918.

AMY VAN HORN RADER,* Instructor in Chemistry.

A. B. Kansas, 1917. Present position, 1918.

IRVIN HAURY,* Instructor in Correspondence Study.

A. B. Bethel, 1916; A. M. Kansas, 1918. Present position, 1918.

CHARLES HOYT WATSON,* Instructor in Education.

Present position, 1918.

GENEVRA ESTELLA PARKER,* Instructor in Public Speaking.

B. O. Ott School of Expression, 1905. Present position, 1918.

JOSEPH HERCULE ARTHUR BEAUPARLANT,* Instructor in Romance Languages.

Collège Saint-Hyacinthe, P. Q., 1887; Diplôme supérieum de l' Alliance Française, Paris, 1908. Present position, 1918.

CLIFFORD C. NESSELRODE,⁵² Instructor in Surgical Anatomy.

M. D. Kansas, 1906. Present position, 1905.

JOSEPH L. McDERMOTT, Instructor in Roentgen Therapy.

M. D. Kansas, 1907. Present position,* 1914.

THOMAS GROVER ORR, Instructor in Surgery, Chief of the Dispensary, and Pathologist to the Bell Memorial Hospital.

A. B. University of Missouri, 1907; M. D. Johns Hopkins University, 1910. Instructor in Bacteriology, Kansas, 1915. Present position, 1915.

O. L. CASTLES,⁵³ Instructor in Surgery.

M. D. University of Michigan, —; Interne, Kansas City General Hospital, —. Present position, 1917.

* Appointed for second semester.

52. Absent for military service.

53. Deceased.

ASSISTANT INSTRUCTORS.

LARRY M. PEACE, Preparator and Demonstrator in the Botanical Laboratory.

A. B. Kansas, 1901; A. M. Kansas, 1906. Present position, 1902.

HANDEL T. MARTIN, Assistant Curator of Paleontology.

Present position, 1907.

CHARLES D. BUNKER, Assistant Curator of Mammals, Birds and Fishes.

A. B. Kansas, 1901; A. M. Kansas, 1906. Present position, 1902.

CHARLES PAUL ALEXANDER, Assistant Curator in Entomology.

B. S. Cornell, 1913. Instructor in Natural History, Cornell, 1914-17. Present position, 1917.

KATE SEARS, Assistant Instructor in Botany.

Present position, 1911.

WILLIAM BYRON BROWN, Assistant Instructor in Journalism and Superintendent of Printing Plant.

Present position, 1913.

LENA MAE SMYTH, Technical Assistant in Bacteriology and Pathology.

A. B. Nebraska, 1912. Present position, 1915.

JOHN JAY JAKOWSKY, Assistant Instructor in Mechanical Drawing.

Present position, 1917.

ALICE LENORE BROWN, Assistant Instructor in Zoölogy.

A. B. Kansas, 1916. Present position, 1917.

MARY LOUISE BACON, Assistant Instructor in Physical Education.

A. B. Friends, 1914.

THE UNIVERSITY.

The University embraces the following schools and divisions:

THE GRADUATE SCHOOL.
THE COLLEGE OF LIBERAL ARTS AND SCIENCES.
THE SCHOOL OF ENGINEERING.
THE SCHOOL OF FINE ARTS.
THE SCHOOL OF LAW.
THE SCHOOL OF PHARMACY.
THE SCHOOL OF MEDICINE.
THE SCHOOL OF EDUCATION.
THE SUMMER SESSION DIVISION.
THE UNIVERSITY EXTENSION DIVISION.
THE DIVISION OF ATHLETICS.
THE DIVISION OF LIBRARIES.
THE DIVISION OF MUSEUMS.
THE DIVISION OF PUBLICATIONS.
THE DIVISION OF STATE SERVICE WORK.
THE DIVISION OF UNIVERSITY SURVEYS.

THE SCHOOLS.

THE GRADUATE SCHOOL.¹

The Graduate School is open to those holding a bachelor's degree from an institution of recognized standing.

The School confers the following advanced degrees: Doctor of philosophy, master of arts, master of science, civil engineer, mechanical engineer, engineer of mines, chemical engineer, and electrical engineer. Students who take the master's degree in the minimum period of one year must be fully prepared to do graduate work; those who are not so prepared find it necessary to take a longer time. The degree of doctor of philosophy may be given after three years of resident graduate work, the last year, at least, being spent at the University of Kansas. Graduates of engineering in this University and masters of science who majored in engineering in the Graduate School may become candidates for professional engineering degrees after three years of professional service.

For the encouragement of higher education, seventeen University fellowships are given to students who have excelled in undergraduate work, and ten fellowships are provided for graduates of Kansas colleges.

1. Detailed information will be found in Section II.

THE COLLEGE OF LIBERAL ARTS AND SCIENCES.²

The College of Liberal Arts and Sciences offers a four-year curriculum, based upon a four-year high-school course and leading to the bachelor's degree. It includes courses offered by the following departments:

Bacteriology.	Latin Language and Literature.
Botany.	Mathematics.
Chemistry.	Music.
Design.	Philosophy and Psychology.
Economics and Commerce.	Physical Education.
English Language and Literature.	Physics and Astronomy.
Entomology.	Physiology.
Geology and Mineralogy.	Political Science.
Germanic Languages and Literatures.	Public Speaking.
Greek Language and Literature.	Romance Languages and Literatures.
History.	Sociology.
Home Economics.	Zoölogy.
Journalism.	

While the courses are largely elective, the requirements governing election have been made with a view to securing a well-rounded program as well as a reasonable degree of specialization.

The purpose of the College is to provide a liberal education; but College students who intend to become candidates for professional degrees may elect certain courses in some of the professional schools.

THE SCHOOL OF ENGINEERING.³

Opportunities for study are offered to high-school graduates who wish to fit themselves for the technical branches of industrial work. The lines of study as they are formulated are under the usual engineering titles, as follows:

Civil Engineering, pertaining mainly to transportation, to design and construction of bridges and public works, to municipal and sanitary problems, and to government work in the survey of lands, in irrigation projects, etc.

Electrical Engineering, pertaining mainly to design, manufacture and operation of electric-power generating machinery, telephone apparatus and electrical instruments, and public utilities plants where such equipment is employed.

Mechanical Engineering, pertaining mainly to manufacturing processes and the plants for carrying on those processes, with especial attention given to the design and construction of machinery. Steam, gas, and refrigeration engineering are included.

Mining Engineering, School of Mines, emphasizing in equal degree the mining processes for coal and metal production, and the subsequent treatment of ores.

Chemical and Metallurgical Engineering, pertaining mainly to chemical analytical methods and to the great variety of manufacturing processes which have a chemical or metallurgical basis.

2. Detailed information will be found in Section III.

3. Detailed information will be found in Section IV.

Architectural Engineering, devoted to the design and construction of all classes of buildings. Much attention is given to pure architectural design, as well as to structural problems.

Engineering and Administrative Science, in which economics courses are grouped with engineering fundamentals to form the basis for a business career with transportation or manufacturing enterprises.

The curriculum is prepared in two forms. One is more strictly technical and provides for the completion of the necessary amount of work in four years by those who are prepared to carry heavy work. Many students find it desirable to take more time. The degree given is bachelor of science in — engineering. The other provides for five full years of work, the first year to be taken in the College of Arts and Sciences. The degree given is bachelor of science. The latter plan is recommended to all recent graduates of high schools.

THE SCHOOL OF FINE ARTS.⁴

The School of Fine Arts is made up of the Department of Music and the Department of Painting. It offers courses in piano, organ, violin, violoncello playing, voice culture, drawing and painting, and public-school music.

The four-year curriculum in music leads to the degree of bachelor of music; in painting, to the degree of bachelor of painting. An artist's certificate is given on completion of a four-year special curriculum in piano, organ, violin, violoncello or voice culture. A teacher's certificate is given on completion of a three-year curriculum in the same subjects. A teacher's certificate is also given on completion of the two-year special curriculum in public-school music or in public-school drawing. On completion of the two latter curricula the State Board of Education will grant a special state certificate entitling the holder to teach music or drawing in any of the graded or high schools of the state.

THE SCHOOL OF LAW.⁵

The School of Law offers three years of legal instruction leading to the degree of bachelor of law. One year of college work in addition to graduation from an accredited high school is required for admission.

The object of the School is to teach the principles of the common law and to furnish a course of legal instruction that shall prepare the student to deal with legal problems and to practice in any state in the Union.

Provision is also made to give those who do not expect to practice law, but who desire a knowledge of certain branches of the law for business purposes, such instructions as may be best fitted to their needs.

THE SCHOOL OF PHARMACY.⁶

The School of Pharmacy is organized to give instruction and practical training in all branches connected with the pharmaceutical profession. The work is open to graduates of accredited high schools and to students having an equivalent preliminary education.

4. Detailed information will be found in Section V.

5. Detailed information will be found in Section VI.

6. Detailed information will be found in Section VII.

Three complete curricula are offered: a two-year curriculum leading to the degree of graduate in pharmacy, a three-year curriculum leading to the degree of pharmaceutical chemist, and a four-year curriculum leading to the degree of bachelor in pharmacy.

Provision is also made for those who desire to pursue special lines of pharmaceutical investigation, regardless of a degree.

Connected with the School is the state laboratory for drug analysis, which affords ample opportunity for those who are preparing for governmental and state work.

THE SCHOOL OF MEDICINE.⁷

The School of Medicine offers a four-year medical curriculum based on two years of college work and leading to the degree of doctor of medicine. The work of the first year and a half is done at Lawrence, in the main laboratories of the University. This work embraces the scientific subjects, or so-called "medical sciences," and forms the basis for the practical work of the last two years. The last two and a half years' work is done at Rosedale, where the Bell Memorial Hospital, owned and conducted by the University of Kansas, is located.

The Training School for Nurses, at the Bell Memorial Hospital in Rosedale, offers a course extending over two and a half years.

THE SCHOOL OF EDUCATION.⁸

The School of Education has for its functions the professional training of teachers and superintendents, and the maintenance of a bureau of school service.

Work done in the School of Education is based upon two years of college work and leads to the degree of bachelor of science in education. Candidates for the college degree of bachelor of arts or the graduate degree of master of arts may elect education courses, subject to the regulations of the faculty concerned.

The faculty of the School of Education grants the University Teacher's Diploma to persons receiving any one of the degrees mentioned above, on the fulfillment of conditions described in the bulletin of the School of Education. This Teacher's Diploma entitles the holder to a Kansas state teacher's certificate.

7. Detailed information will be found in Section VIII.

8. Detailed information will be found in Section IX.

THE DIVISIONS.

SUMMER SESSIONS.

There are two terms of the Summer Session, of six weeks and four weeks, respectively, each independent of the other in the courses offered. The first term begins immediately after Commencement Day. The second term begins the day after the first term closes.

Most of the work offered in the Summer Session is chosen from the courses given regularly in the various schools, and may be counted toward degrees in the same way as if taken in the regular academic year.

The maximum amount of credit that may be earned in the Summer Session is six hours for the first term and four hours for the second.

UNIVERSITY EXTENSION.¹

Through the Correspondence-study Department the following courses are offered:

First. Regular University studies which may, under approved conditions, be taken for credit toward a degree.

Second. High-school and preparatory studies for those who cannot arrange to attend the established institutions.

Third. Vocational courses, which supply knowledge and training that have a direct bearing upon advancement and efficiency in given occupations.

Fourth. Advanced courses, designed to help those in professional or practical life to keep in touch with certain advancing conditions of science and knowledge.

Classes under regular University instructors can be offered in a limited number of communities where several desire to take up the same course. All courses offered by the Correspondence-study Department, whether taken for University credit or not, are on a uniform basis with reference to the amount of work covered. Work which is satisfactorily completed has, therefore, a definite value.

ATHLETICS.²

Senate Regulation. The University Senate has adopted rules governing the standing of all those who represent the University in athletic contests. Good scholarship and gentlemanly conduct are required of all such contestants.

Athletic Association. This association is organized to promote and control the intercollegiate athletics of the University of Kansas. The Chancellor is *ex officio* president, and there are five faculty and five student members. The athletic director is general manager of athletics. All forms of athletics are under the immediate control of the director and his assistants, who are also members of the faculty.

1. Detailed information will be found in Section XI.

2. Detailed information will be found in Section XII.

Intramural Athletics. The general athletics of the University include football, baseball, basket ball, track, tennis, and soccer. Intramural contests are held in all branches.

Intercollegiate Games. The University of Kansas is a member of the Missouri Valley Intercollegiate Athletic Association, and a full schedule of games in football, baseball, basket ball, track, and tennis is arranged with members of that association and other educational institutions.

LIBRARIES.²

The Libraries of the University contain 120,109 volumes and some 44,000 pamphlets. An annual appropriation of \$17,000 is devoted to the purchase of books. The periodical room receives 1,185 periodicals and publications of learned societies, and 318 newspapers published in Kansas. The departments of Germanic Languages, Romance Languages, Latin, English, Education, American and European History, Sociology and Economics have special reading rooms in Spooner Library.

Nine departmental libraries are housed in the buildings used by their respective departments or schools, each in charge of an assistant librarian.

The Library of the Kansas Academy of Science, in charge of the secretary of the Academy, is housed in Fraser Hall.

MUSEUMS.²

The scientific collections belonging to the University are grouped according to the teaching department in charge.

The botanical collection contains 10,000 identified and labeled specimens.

The entomological collections comprise about 26,000 species and 300,000 specimens.

Geology is represented by extensive collections of specimens in economic, petrographic and mineralogical groups.

In paleobotany and paleontology the collection is one of the most complete in America.

The zoölogical collections are rich and varied.

The classical museum contains a collection of casts of Greek and Roman sculpture, *facsimile* reproductions of objects of art and utility, original coins, and photographs.

UNIVERSITY PUBLICATIONS.²

The University of Kansas Science Bulletin is maintained by the University as the medium for the publication of the results of original research by members of the University. Two or three volumes are issued in each academic year. The price of subscription is three dollars a volume. Individual numbers vary in price with the cost of publication.

University of Kansas Studies, Humanistic Series, is a series devoted to the presentation of the results of research along humanistic lines. The numbers are issued at regular intervals. Each number is a complete monograph, and its price varies with cost of publication. Arrangements for exchange may be made by addressing the University Library.

2. Detailed information will be found in Section XII.

The University Geological Survey Bulletins are issued from time to time as material for them is gathered.

The University Entomological Bulletins are reports issued in regular series from time to time, comprising the results of entomological investigations conducted by the University. These deal in part with applied problems of practical value referred to the University by various interests of the state, and in part with fundamental research problems presented by such investigations. These publications will be sent free to any citizen of the state upon application.

The Bulletin of the Engineering Experiment Station is the medium through which the results of investigations in engineering lines are published. Numbers are issued at irregular intervals, as material becomes available, usually two or three each year. It is under the direction of an Experiment Station staff. Communications should be addressed to the Director.

STATE SERVICE WORK.³

Entomological Field Work. In conjunction with the State Agricultural College, the University conducts the field work of the State Entomological Commission.

Water Analysis. The University in coöperation with the State Board of Health maintains laboratories for the chemical and bacteriological examination of water. The special purpose of this examination is to assist Kansas communities to secure and preserve safe supplies of water.

Ceramics and Kansas Clays. The University is engaged in the examination of the clays of the state and the determination of their fitness for the fine and useful arts.

State Chemical Research. This division of the Department of Chemistry is engaged in the study of chemical problems in which the industries or the communities of Kansas may be interested.

Food and Drug Analysis. By legislative enactment it is the duty of the University to examine samples of food and drugs for their purity, and report to the State Board of Health.

Weights and Measures. The University has in its custody the sets of standard weights and measures of the state; and the deputy state sealer, who is a member of the faculty, tests weights and measures in the enforcement of the laws governing commercial standards.

Engineering Experiment Station. Numerous investigations and experiments with Kansas building stone, brick and stone paving, the purification of sewage, the properties of coal, natural gas, and oils, the calibration of metering appliances for municipal service, etc., have been conducted and the results published in a series of bulletins.

3. Detailed information will be found in Section XII.

UNIVERSITY SURVEYS.³

Biological Survey. A biological survey of the state is being conducted by the departments of Botany, Zoölogy, and Entomology. The results are made known in special reports.

Geological Survey. The work of the geological survey is carried on through field expeditions sent out annually. The results thus far have been published in ten volumes, besides many bulletins.

HISTORY.

The idea of a State University in Kansas dates from the early days of Kansas territorial government. Each of the constitutions adopted for the territory of Kansas during the period of its memorable struggle provided for the establishment of an institution of higher learning, to be supported by public funds. The last of these, which became, on the admission of Kansas to the Union, the constitution of the state, declares that "provision shall be made by law for the establishment, at some eligible and central point, of a State University, for the promotion of literature and the arts and sciences."

By an act of Congress approved January 29, 1861, the day on which Kansas was admitted to statehood, seventy-two sections of land were set apart and reserved for the use and support of a State University. The state accepted the trust, and in 1863 the legislature selected the city of Lawrence as the location for the institution. One year later the legislature passed an act organizing the University and giving to it the name of "The University of Kansas." A charter was immediately drawn up, and the government of the institution was vested in a Board of Regents, appointed by the governor.

The board thus appointed held its first meeting on March 21, 1865, and decided to open a preparatory department as soon as the citizens of Lawrence should provide rooms for that purpose. This the citizens undertook to do, and by the middle of September, 1866, they were enabled, by the aid of gifts from various individuals and organizations, to erect the building known for 46 years (from the erection of Fraser Hall, in 1872, to the demolition of "Old North" itself, in 1918) as North College. The first faculty of the University had been elected by the Board of Regents in July of the same year, and on the 12th of September the University was opened to the young men and women of the state.

In 1876 the legislature of the state established a normal department, which, though successful, was discontinued in 1885. The Law School was opened in October, 1878, and the School of Pharmacy was established in 1885. A course in engineering was arranged as early as 1873, but remained a part of the collegiate department until 1891, when the School of Engineering was organized and the collegiate department became known as the School of Arts. During the same year the preparatory department was discontinued, and the departments of music and art, established in 1877, were combined to form the School of Fine Arts. The Graduate

3. Detailed information will be found in Section XII.

School was organized in 1896; and in 1899 the preparatory medical course, which had been offered in the collegiate department since 1880, was made independent as a School of Medicine, the first two years only being given. In 1905 the clinical departments were added at Rosedale, thus completing a four-year medical course. In 1904 the Board of Regents changed the name of the School of Arts to the College of Liberal Arts and Sciences. The Summer Session Division was established in 1903; the School of Education and the Division of University Extension were established in 1909; the Division of Athletics was established in 1915.

The Rev. R. W. Oliver, the first Chancellor of the University, resigned his position after one year of service, and was succeeded by Gen. John Fraser. In 1874 Dr. James Marvin was made Chancellor. His resignation, in 1883, was followed by the election of Dr. Joshua A. Lippincott, who served until June, 1889, when Mr. W. C. Spangler, a graduate of the University and a member of the Board of Regents, was appointed to act as Chancellor until the election of a regular incumbent. In 1890, Prof. Francis H. Snow, who had been a member of the faculty from the beginning, was elected. When, in 1901, Chancellor Snow resigned on account of failing health, Mr. Spangler again became acting Chancellor, serving until Dr. Frank Strong assumed the office, August 1, 1902.

In 1913 the powers belonging to the Board of Regents passed by legislative act to the State Board of Administration. In 1917 these powers passed to a newly constituted board controlling all state institutions, educational, charitable, and correctional. This board took office July 1, 1917.

GOVERNMENT.

THE BOARD OF ADMINISTRATION.

By act of the legislature of 1917, the State Board of Administration consists of the Governor, who acts *ex officio* as chairman, three members appointed by the Governor, and a business manager chosen by the board. This board has full power to administer the affairs of the University, subject only to legislative enactments. The term of office is four years.

THE UNIVERSITY SENATE.

The University Senate consists of the Chancellor, the deans and directors of divisions, and all members of the instructional staff having the rank of professor or associate professor. The Senate has jurisdiction over all internal matters involving general University policy. The Chancellor is *ex officio* chairman and executive officer of the Senate.

THE FACULTIES OF THE UNIVERSITY.

The faculty of each school consists of the Chancellor, the Dean, and all professors, associate professors, assistant professors and instructors giving work in that school. It has jurisdiction over all matters which concern primarily its own school. The Chancellor is chairman of each faculty. The Dean of each school is its executive officer.

DEPARTMENTAL FACULTIES.

A departmental staff consists of all members of its instructional force. It has jurisdiction over all matters which concern primarily its own internal policy.

UNIVERSITY DIVISION COMMITTEES.

A University division is a body having relations with more than one of the schools or departments of the University. The divisions are administered by committees, subject to the general regulations of the Senate. Each division has an executive officer, called the Director.

EQUIPMENT.

PROPERTY AND INCOME.

The University owns equipment, buildings, and grounds of an estimated value of \$2,000,000. It receives in normal years about \$70,000 annually from fees and \$7,200 from the land fund. For the biennium of 1917-1919 the state appropriated \$1,523,000, including \$225,000 for building.

THE CAMPUS.

The campus, comprising some 160 acres of hill top and hill slope, has so far contrived to retain much of its natural beauty. The buildings follow the curve of the hill; the walks take the line of least resistance; the trees in North Hollow form a tangled mass much appreciated by birds and art students. There has been almost no conventional planting.

The campus of the Medical School at Rosedale also lies high and is capable of artistic development.

BUILDINGS.

There are twenty-two University buildings, of which sixteen were erected by the state and six by private gift.

Fraser Hall was erected in 1872. Its total cost has been approximately \$182,000, of which one-half was appropriated by the legislature, and one-half contributed by the city of Lawrence. In this building are located the executive offices of the University, including the Chancellor's office and the office of the Registrar; the offices of the Dean of the College, the Alumni Secretary, the Adviser of Women, and the University Extension Division; the offices and recitation rooms of the Departments of English, German, Greek, Latin, Romance Languages and Home Economics, and the School of Education; also, the classical museum. The building is named in honor of Gen. John Fraser, the first active Chancellor of the University.

Medical Hall was erected in 1884, at a cost of \$12,000—\$8,000 from interest on the permanent endowment fund of the University, and \$4,000 appropriated by the legislature. The physiological laboratories are

located on the second floor. The basement is occupied by the Department of Journalism.

Snow Hall was erected by the state in 1886, at a cost of \$50,000. In this building are located the laboratories and lecture rooms of the Departments of Bacteriology, Botany, Entomology, Zoölogy and Medical Physiology. The laboratories of the State Water Survey are located in the south side of the basement. The building is named in honor of Prof. Francis Huntington Snow.

The Heating Plant was erected by the state in 1887, at a cost of \$16,000, and after a fire in 1898 was rebuilt and equipped at a cost of \$30,000.

Spooner Library was erected in 1894, at a cost of \$75,000, through the generosity of William B. Spooner, of Boston. On the first or main floor are located the general reading room, a newspaper room, and the Librarian's and Cataloguer's offices.

The Chancellor's Residence was erected in 1894, at a cost of \$12,000, from the William B. Spooner bequest.

Blake Hall was erected by the state in 1895, at a cost of \$58,000. It is occupied by the Department of Physics and Astronomy. It is named in honor of Prof. Lucien Ira Blake.

Fowler Shops was completed in 1899, at a cost of \$21,000. It was given by Mr. George A. Fowler, of Kansas City, Mo., as a memorial of his father. It is devoted primarily to instruction in shop work.

The Chemistry and Pharmacy Building was completed in 1900, at a cost of \$70,000, appropriated by the legislature. The building is arranged specifically for laboratory purposes for the Departments of Chemistry and Pharmacy.

The Dyche Museum of Natural History, named in honor of Prof. Lewis L. Dyche, was erected by the state in 1902, at a cost of \$75,000. It houses collections in entomology, paleontology, mammals, and birds. Part of the basement is occupied by the Department of Anatomy.

Green Hall, named in honor of Dean James W. Green, was erected by the state in 1905, at a cost of \$65,000. It is occupied by the School of Law and the Department of Public Speaking.

The Robinson Auditorium-Gymnasium was erected by the state in 1905, at a cost of \$100,000. By removing the apparatus, the gymnasium may be transformed into an auditorium with a seating capacity of 3,000. The building is named in honor of Charles Robinson, first governor of Kansas, and his wife, Mrs. Sara T. D. Robinson.

The Eleanor Taylor Bell Memorial Hospital. The first section of the Bell Memorial Hospital, at Rosedale, was erected in 1905, at a cost of \$30,000, on property and by funds given to the University for that purpose by Dr. Simeon B. Bell, of Rosedale, and was named in memory of his wife. In 1911 a second section was built through an appropriation by the legislature of \$50,000. The combined hospital has about seventy-six beds, and is used as a teaching hospital. To it are sent county pa-

tients under the indigent poor law, the crippled children law, and the obstetrical service law.

The Clinical Laboratory at Rosedale was erected in 1906, at a cost of \$40,000, on property and by funds furnished by Dr. Simeon B. Bell.

The Service Building, erected by the state in 1908, contains the office of the superintendent of buildings and grounds, and the workmen's shops.

Marvin Hall was erected by the state in 1907, at a cost of about \$90,000. It contains equipment and classrooms for the general work of the School of Engineering. This building is named in honor of Frank O. Marvin, first Dean of the School.

The Power Plant and Mechanical Laboratory was completed in 1909, at a cost of about \$23,000. In the power-plant section are the power-generating machinery for lights and power for the University and the pumps for the regular water service and fire protection. The laboratory section contains equipment for instruction in technical engineering work.

Haworth Hall was erected by the state in 1909, at a cost of \$50,000. A \$7,500 clay laboratory was added in 1911. This building is named in honor of Erasmus Haworth, professor of geology.

Liberal Arts Building. The east wing of the College of Liberal Arts and Sciences and Administration Building was erected in 1911 by the state, at a cost of \$125,000. It is occupied by the Departments of Economics, History and Political Science, Mathematics, Philosophy, and Sociology; the psychological laboratories occupy the basement, and the Department of Drawing and Painting the third floor.

The legislature of 1917 appropriated \$225,000 for the erection of classrooms in the middle section and west wing.

The Dispensary Building at Rosedale was erected in 1915, at a cost of \$25,000, provided by the legislature.

Oread Training School was erected in 1915, at a cost of \$6,000. This sum was largely a gift of the School.

The Vivarium was built in 1916 from the fund for permanent repairs and improvements.

UNIVERSITY ORGANIZATIONS.

GENERAL.

The Alumni Association is composed of all persons holding degrees granted by the University, though active membership is limited to those who pay annual dues. An endowment membership is maintained for those who subscribe to the endowment fund. An associate membership is for such former students of the University, not graduates, as pay the associate membership dues. Such former students may also become associate-endowment members. The control of the affairs of the association is in the hands of a board of ten directors. A general secretary is employed, whose office is at the University and who has charge of the publications of the association, and keeps, so far as possible, a complete record of facts concerning the alumni. The secretary is editor of the *Graduate Magazine*, which is sent monthly to all members of the association. The regular meetings of the association occur during commencement week of each year.

The Graduate Club meets once a month. Its interests are social, literary, and scientific. Its aim is to allow graduate students to become acquainted with each other and with each other's work.

University Women's Association. The University Women's Association is composed of the women connected with the University as instructors, librarians, or officials, and the wives of instructors. This organization gives a general reception at the opening of each academic year, maintains a scholarship for women, and in various other ways shows its practical interest in the affairs of the University.

RELIGIOUS.

Young Men's Christian Association. This organization has a membership of over five hundred. The various activities of the association are carried on by the members themselves, under a board of directors and a general secretary whose entire time is devoted to the work.

In coöperation with the churches of Lawrence and the Christian and Presbyterian Bible chairs, the association offers a large number of Bible-study courses, under the leadership of University professors and advanced students. Courses in the study of missions are also given. The association is largely responsible for the support of its former general secretary, Mr. H. C. Herman, who is now engaged in association work in India.

Through the courtesy of the University Bible chair of the Christian Women's Board of Missions, the association occupies quarters in Myers Hall.

The association welcomes students at the opening of the University, aiding them in finding suitable rooming and boarding places. The employment bureau, which is conducted jointly by the association and the University, renders all assistance possible to students desiring to earn a part of their expenses. During the summer months the employment bureau makes a canvass of the student district for rooms, and its information as to rooms and board is most complete. The association issues a student's handbook, giving valuable information to prospective students, which is ready for distribution about September 1, and will be sent free upon request. Address all correspondence to the general secretary.

Young Women's Christian Association. This is an organization of 500 University women, with a permanent sustaining membership of over 100 faculty women and alumnae. The association employs a general secretary. The purpose of the association is fivefold: (1) to develop and deepen the spiritual and moral life of the young women of the University, and to bring to them the conception that no part of their life lies outside of their religion; (2) to be the medium between the women students of the University and the churches of Lawrence; (3) to give practical aid to women students whenever they are in need of it; (4) to be one of the agencies to create the best social standards; (5) to train young women to become efficient workers in church and philanthropic organizations.

Religious services are held weekly, on Tuesday afternoons, at 3:00, in Myers Hall. During the opening week of the fall term members of the association assist Freshman girls in registering and finding classrooms and rooming and boarding places.

Information concerning rooming and boarding places and employment for girls may be obtained by applying to the general secretary.

The Christian Church Bible Chair. April 1, 1901, the Women's Board of Missions of the Christian Church established a chair of Biblical instruction. Myers Hall, erected at a cost of \$40,000, affords commodious lecture rooms and offices, an assembly room seating five hundred, a library and museum of missions.

There is no organic relation between the Bible chair and the University. The privileges are offered to all students, and the instruction is nonsectarian. The purpose of the work is to give students a more intimate acquaintance with the Bible, and to render them assistance in their religious life.

The courses in the Old and New Testaments include The History of the Jewish People, The Teaching of the Prophets, The Life of Christ, and The Life of Paul. Special courses are also offered in Christian Evidences, Comparative Religions, The Work of Preaching, and other lines of Christian thought and activity, as demanded.

A library of 1,500 volumes on Bible study, missions, religion, Christian sociology, the Sunday school, and related subjects, is accessible to all.

The present occupant of the chair is Arthur Braden, A. B. (Hiram College), graduate of Auburn, N. Y., Theological Seminary, Ph. D. (Syracuse University).

Westminster Association. In 1905 the Presbyterians of Kansas organized Westminster Association for the purpose of offering Biblical in-

struction to all students and affording pastoral care for Presbyterian students of the University. On October 7, 1910, Westminster Hall, the gift of W. W. Cockins, of Lawrence, was dedicated. The hall is well adapted to class work, and also affords a center for the social life of the students. In July, 1917, Rev. Franklin H. Geselbracht, B. A. (Univ. of Chicago), Ph. D. (Leipsic), was elected Presbyterian University pastor. Mrs. Geselbracht and a number of University professors are associated with him in the work.

The following courses are offered: A four-year course in Bible History; the Bible and Modern Science; the Lives and Doctrines of the Prophets; Pauline Theology; Missions and World Problems; Comparative Religions; the Sources of the Bible; and the Evidences of Christianity.

There is no organic connection with the University. The teaching is non-sectarian and without charge. All students are welcome to the social life of the hall.

All correspondence relative to the work of the Westminster Association should be addressed to the Principal.

City Churches. The churches of Lawrence unite in extending to the University students a cordial invitation to enter with them into Christian fellowship, and endeavor to make them feel that, irrespective of church membership, they are welcome to all the privileges which the church affords. To this end the various churches hold receptions for the students at the beginning of each year, the pastors preach special sermons from time to time, and the young people's societies arrange for social gatherings, to which students especially are invited. There are also organized, in the principal Sunday schools of the city, classes for University students, a number of these classes being in charge of University professors.

The First Methodist Church has a regularly appointed associate pastor, who gives his main attention to the students of his denomination. Several other churches appoint students each year to act as assistants to the local pastors.

By these means the students are brought into close contact with the religious life of Lawrence. A religious census of the student body during the past few years shows that an average of eighty-seven percent of the students have religious preferences, sixty-three percent are church members, and that a large number are actively engaged in the work of the various churches and organizations connected therewith throughout the city.

LITERARY.

The Phi Beta Kappa Society. The Kansas Alpha chapter of this society was organized in 1890. The object of the society is, primarily, the promotion of scholarship in the University. To this end, a portion of the members of the graduating class of the College, never to exceed one-sixth, who have made high records of scholarship in their University studies, are elected to membership.

German Club. The membership of this club, which meets once in two weeks, consists of such students as have made sufficient progress in

German to take active part in the programs. The object of the club is to furnish the student special opportunity to familiarize himself with the spoken language, and to promote an interest in all that is German. Musical, literary, and dramatic programs are rendered by the students. There are also talks and lectures by members of the faculty and outside speakers. The meetings are conducted exclusively in German. Each year a German play is given by students of the department.

The Quill Club is the parent chapter of an intercollegiate organization of students and instructors especially interested in literary activities and literary criticism. Applicants for membership must submit manuscript for the approval of the club.

The Associated Journalism Students are organized for the purpose of bringing in speakers from the ranks of active journalists, and in general of working for the advancement of the Department of Journalism.

The English Club is composed of the instructors and advanced students in the Department of English, and meets bimonthly.

The French Club. The instructors and students in the French Department compose the Cercle Français, which meets once a week to present a brief literary program, reviews of articles in the leading French magazines, and reports on French topics. French only is used, as one of the chief objects of the club is to provide better opportunities than can be offered in the classroom for the practice of the spoken language. Another opportunity for such practice is found in the French play, given towards the close of each year.

The Greek Symposium consists of the instructors and students of the Greek Department, who meet once a month for the reading of papers and discussion of topics which are either too general or too special for class work. The meetings are held in the evening, at the home of one of the instructors, and the special program is followed by a social hour.

The Spanish Club. The Ateneo has been formed on the same general lines as the French Club for those students who wish to acquire facility in the use of spoken Spanish. At its weekly meetings, besides programs of a literary character, news of the Spanish-speaking world is reported and discussed. The Spanish play gives further opportunity to acquire readiness in speaking.

SCIENTIFIC.

The Sigma Xi Society. The Iota chapter of this honorary scientific society was established at the University in 1890. The society confers the honor of election to membership upon instructors and students who have shown special aptitude along scientific lines, especially with regard to research work. This chapter holds monthly meetings for the reading and discussion of scientific papers, and is the center of scientific interests at the University.

The Chemical Club is composed of the instructors and advanced students in the Department of Chemistry, and Chemical Engineers. Weekly meetings are held, and the programs include reports on research work by instructors and students, reports on scientific meetings and associations,

reviews of new books and important articles in chemical journals, and notices of important inventions and new chemical processes.

Civil Engineering Society. This is maintained by students, under the guidance of the instructors in the department. It holds monthly meetings and is frequently addressed by practicing engineers, besides maintaining a program of papers and discussions.

University of Kansas Branch of the American Institute of Electrical Engineers. This is composed of instructors and students who are associated members or student members of the national organization. It holds biweekly meetings for the discussion of papers presented before the national meetings of the association, for the review of current literature, and for addresses by practicing engineers.

University of Kansas Student Section of the American Society of Mechanical Engineers. This is essentially a student organization, under the supervision of an instructor who is a member of the national society. Weekly meetings are held for reports on current engineering literature, with occasional addresses by practicing engineers.

Affiliated Students' Society of the American Institute of Mining Engineers. This is a society composed of Junior and Senior students and instructors in the department, which enjoys the advantage of association with the institute. Meetings are held monthly for the discussion of the publications of the institute and the presentation of papers. Weekly department meetings in Mining Journal supplement the work of the society.

The Architectural Engineering Society is a student organization under the supervision of the head of the department, who is a member of the American Institute of Architects. Biweekly meetings are held, at which illustrated lectures on allied subjects are given by faculty members or visiting architects; and papers presented by student members are discussed by the organization.

The Botany Club is composed of instructors and students of the department of botany. It meets twice a month.

The Snow Zoology Club is composed of instructors and advanced students of the department. It meets twice a month for the study and discussion of questions of general interest to the members, the aim being more particularly to keep in touch with recent discoveries.

The Mathematical Club is an organization of advanced students of the Department of Mathematics, with one faculty member elected by them as their official adviser. It meets twice a month to discuss mathematical questions of general interest.

The Entomology Club is composed of instructors and advanced students of the Department of Entomology. The meetings are held weekly, and are devoted to the presentation of researches conducted by the department and to current advances as presented through the entomological journals. Elections to membership are based on general University scholarship and special proficiency in entomology.

The Home Economics Club meets once a month. Its membership is elective.

The Geology Club is composed of mining students and such College students as specialize in geology. It meets once in two weeks.

The Pharmaceutical Society holds bimonthly meetings for the study of subjects especially related to the art of pharmacy, and for friendly intercourse. Its membership is drawn from students, faculty, and alumni of the School of Pharmacy.

DEBATING.

Debating Council. The Debating Council is made up of six members of the faculty, appointed by the Chancellor of the University, and two representatives from each of the two debating societies and the honorary debating fraternity. The Council has general supervision over all preliminary and interstate debates.

CIVIC.

The Jurisprudence Club meets every three weeks for the discussion of general questions of current interest. Its membership is elective.

The International Polity Club is an organization of men students who are interested in the study and discussion of international problems. It is affiliated with a national organization of college polity clubs and is represented on the national council of the organization. The membership is elective and any student is eligible for election.

The Woman's Forum meets twice a month to discuss public questions. Membership is informal, and the meetings are open to all women of the University.

DRAMATIC.

Dramatic Club. The students of the University maintain a dramatic club for the study and presentation of modern plays. Membership in the club is open to all students and is secured by try-outs held at stated intervals.

The Blackfriars Club is an organization of those majoring in the department of English. Plays of interest in connection with the history of the drama are given twice yearly.

MUSICAL.

Orchestra. The University supports an orchestra of forty instruments, under the direction of one of the faculty of the School of Fine Arts. The Orchestra makes a study of the orchestral masterpieces, furnishes music for University events, and gives two concerts annually.

Women's Glee Club. The Women's Glee Club is under the direction of the head of the Department of Voice Training. Membership is competitive. An annual concert is given.

Men's Glee Club. The Men's Glee Club is under the direction of the head of the Department of Voice Training of the School of Fine Arts. The general control of the club, as to financial obligations and tours, is in the hands of a committee of the University Senate.

Band. The University Band is a permanent organization, fully uniformed, and directed by a professional leader. The band furnishes music for the more important University gatherings and gives several concerts annually.

PUBLIC OCCASIONS.

Convocation. At the opening of the fall semester, and semimonthly during the year, convocations of the faculty and student body are held. At these gatherings speakers, either from the faculty or from abroad, discuss topics of general interest. The purpose of these meetings is to bring together all members of the University for instruction as well as for the development of a common spirit.

Vesper Services. Religious exercises are held occasionally at 4:30 Sunday afternoons. They are in charge of the Y. M. C. A. and the Y. W. C. A. The service is largely musical, though an address is often given.

University Lectures. Whenever circumstances make them available, men of recognized standing in any field of science or art are secured to give addresses at the University. About ten such addresses are given yearly.

University Concerts. The University supports a course of eight concerts given by artists and organizations of the highest standing.

GENERAL INFORMATION.

ADMISSION.

The requirements for admission of graduates of Kansas high schools to the various schools of the University have been fixed by legislative enactment, which, by section 9, house bill No. 631, session of 1915, provides that:

"Any person who shall complete a four-year course of study in any high school accredited by the State Board of Education shall be entitled to admission to the Freshman class of the State University, the State Agricultural College, or any of the State Normal Schools, on presenting a statement containing a transcript of his high-school record, signed by the principal of the school, and certifying that such person has satisfactorily completed said course of study."

For the guidance of prospective students who do not come under the provisions of the law, and who desire to prepare themselves for admission to any of the schools of the University, statements of entrance requirements will be found in the special sections of the catalog pertaining to those schools.

Entrance Examinations.

Candidates for admission who are not graduates of accredited Kansas high schools may offer themselves for examination in subjects required for admission.

Examination for such candidates will be held as follows:

Monday, May 27, or Monday, September 16.

8:30-10:30	Agriculture.
10:30-12:30	Physics.
1:30- 3:30	Latin.
3:30- 5:30	Commercial Geography.

Tuesday, May 28, or Tuesday, September 17.

8:30-10:30	English.
10:30-12:30	Algebra.
1:30- 3:30	Geometry.
3:30- 5:30	Civics.

Wednesday, May 29, or Wednesday, September 18.

8:30-10:30	Physical Geography.
10:30-12:30	German.
1:30- 3:30	History.
3:30- 5:30	Economics.

Thursday, May 30, or Thursday, September 19.

8:30-10:30	Romance Languages.
10:30-12:30	School Methods and Management.
1:30- 2:30	Physiology.
3:30- 5:30	Psychology.

Times for examinations in subjects not given in the above list may be arranged with the committee on examinations (room 202, Blake Hall), but will be set during the above days.

Entrance examinations may be taken also during the week of mid-year examinations.

Candidates for admission may divide the examination between two years, or between the two examinations of the same year, under the following conditions: The applicant may present himself at the preliminary for examination in any or all of the prescribed subjects, and if he is successful in five or more subjects he need not be again examined in them.

Admission of Special Students.

Special students are admitted to the various schools of the University upon conditions prescribed by the faculties.

Admission to Advanced Standing.

The regulations governing admission to advanced standing in the schools of the University are administered by a committee of the University Senate, which examines into the merits of each case presented to it, and either credits the applicant with a certain rank or recommends him to the heads of departments for advanced credit or examination.

Application for advanced standing should be made as early as possible. Students who expect to present credits for advanced standing will save much time and annoyance for themselves if they will forward their credentials as early as possible to the secretary of the Advanced Standing Committee. These credentials must include official transcripts of preparatory school records and college records, and a certificate of honorable dismissal from the college or university attended. These credentials should be sent to the secretary shortly after the end of the spring semester if the applicant intends to enter the University in the fall. They should be sent, at the very latest, three weeks before the opening of the University in the fall. The Advanced Standing Committee can furnish no estimate of advanced standing credit to prospective students unless the credentials indicated above are sent to the committee. The Committee can not consider applications for advanced standing which are made later than thirty days after matriculation.

If the applicant for advanced standing should be required to take an examination in any subject which he presents for advanced standing credit, this examination must be taken not later than the sixth week of his first semester in the University.

No advanced standing credit will be given for work done during a four-year course of study in a high school, academy, or preparatory school.

The maximum advanced standing credit for work done in a junior college is sixty hours. *In no case will work done in a junior college be credited as work of the Junior or Senior years in the University.*

Advanced standing credit is entirely provisional and may be withdrawn in whole or in part if the subsequent record of the student in the University shows that his scholarship and attainments do not justify the credits given at the time of his entrance. This provisional advanced standing rating will not become premanent nor be entered upon the books of the University until the student, by the successful completion of a year's work, has satisfied the Dean of the school concerned that his rating is justified.

All inquiries and correspondence concerning advanced standing should be addressed to E. W. Murray, secretary Advanced Standing Committee, University of Kansas.

REGISTRATION.

All candidates for admission having certificates from accredited schools and all students of the University intending to pursue their studies during the ensuing year must present themselves for registration at the University on September 16, 17, 18, 1918. *Registration at a later date will be permitted only on the payment of a fee of one dollar.*

ENROLLMENT.

After registration has been completed with the Registrar and fees have been paid, students should apply to the Dean of the school to which they desire admission for enrollment in their classes. Enrollment the first semester occurs September 17, 18, 1918, and on the first day of the second semester. *Enrollment at a later date will be permitted only on the payment of a fee of one dollar.*

EXAMINATIONS AND REPORTS.

Final Examinations are held for all students during the last week of each semester.

Special Examinations will be given only during examination weeks and during the opening week of the fall semester. All requests for special examinations must be approved by the Dean.

Dismissal. Absence from examination or failure in more than one-third of his work in any one semester severs a student's connection with the University.

Withdrawals. A student may be withdrawn from a class by the Dean, with the consent of his instructor. Honorable withdrawals will be permitted only when the student's work in the subject is of passing grade.

Whenever a student is failing in part of his work the Dean may, at his discretion, withdraw him from one or more of the classes in which he is failing and give him a failure in such subjects.

Grades. The letter A is reserved for work of marked excellence, and indicates high honor. The letter B indicates very good work, of much more than average quality. The letter C indicates that the work has been of good average character, better than that which deserve merely a pass. The letter D indicates work the lowest in quality that would enable a student to pursue, without undue lack of material or of method, the next dependent course, whether the latter be in the same department

or in a related department. The letter I indicates that work is incomplete. The letter F indicates failure.

Incomplete and Failure. The work of a student who fails to appear for final examination is graded I or F, according as his class standing has been of passing grade or below passing grade. Work that has been of passing quality, some part of which is for good reason unfinished, is also graded I.

Grade I may be removed by special examination, but unless properly removed before the beginning of the corresponding semester of the following year it becomes a failure, and the student must reënroll in the course.

Grade F may be removed only by such reënrollment.

Inadequate Preparation. When students show by their current work insufficient entrance preparation in any study they may be required to make good such deficiency in any manner prescribed by their instructors.

EXPENSES OF STUDENTS.

Fees.

Students are required to pay fees as scheduled below. In all cases, the matriculation fee is paid but once—at the time the student first registers in any school of the University. The incidental fee is payable in full each year at registration.

COLLEGE OF LIBERAL ARTS AND SCIENCES.

Matriculation fee, for residents of the state	\$5.00
for nonresidents	10.00
Incidental fee, for residents of the state	10.00
for nonresidents	20.00
Diploma fee, at graduation.....	5.00

SCHOOL OF ENGINEERING.

Matriculation fee, for residents of the state	\$5.00
for nonresidents	10.00
Incidental fee, for residents of the state	10.00
for nonresidents	20.00
Diploma fee, at graduation.....	5.00

SCHOOL OF LAW.

Matriculation fee, for residents of the state	\$5.00
for nonresidents	10.00
Incidental fee, for residents of the state	25.00
for nonresidents	35.00
Diploma fee, at graduation.....	5.00

SCHOOL OF PHARMACY.

Matriculation fee, for residents of the state	\$5.00
for nonresidents	10.00
Incidental fee, for residents of the state	25.00
for nonresidents	35.00
Diploma fee, at graduation.....	5.00

Students taking the regular four years in pharmacy are registered during the first two years in both the School of Pharmacy and the College of Liberal Arts and Sciences, and may pay the College incidental fee so long as their work is confined to courses offered in the College.

SCHOOL OF MEDICINE.

Matriculation fee, for residents of the state	\$5.00
for nonresidents	10.00
Incidental fee, for residents of the state	25.00
for nonresidents	35.00
Diploma fee, at graduation	5.00

(For special fees for clinical work, see section VIII.)

During the first year of the regular four years in medicine students are registered in both the School of Medicine and the College of Liberal Arts and Sciences, and will pay the College incidental fee. During the succeeding years they will pay the incidental fee of the School of Medicine.

A student taking two-thirds or more of his work in the School of Pharmacy or the School of Medicine is considered a student of that school in which he takes the work, and will be required to pay the regular tuition in full: \$25 for residents of the state, and \$25 for nonresidents. This applies in particular to all College students who elect the major part of their work in the School of Pharmacy or the School of Medicine.

A student who is enrolled for less than two-thirds of his work in either school will be required to pay, in addition to the regular incidental fee required by the College, a pro rata professional school incidental fee of fifty cents for each hour in which he is enrolled. This has special application to College students who are taking the major part of their work in the College and have paid the incidental fee required by the College, but who desire to elect certain courses in the School of Pharmacy or the School of Medicine.

SCHOOL OF FINE ARTS.

Matriculation fee, for residents of the state	\$5.00
for nonresidents	10.00
Diploma fee, at graduation	5.00

(Special fees for fine arts students are given in detail in section V, School of Fine Arts.)

GRADUATE SCHOOL.

Matriculation fee, for residents of the state	\$5.00
for nonresidents	20.00
Incidental fee, for residents of the state	10.00
for nonresidents	20.00
Diploma fee, for each degree	5.00

SUMMER SESSION.

Incidental fee, for residents of the state (6 or 10 weeks),	\$10.00
for nonresidents	15.00
for 4-weeks session, one-half of the above.	

SCHOOL OF EDUCATION.

Matriculation fee, for residents of the state	\$5.00
for nonresidents	10.00
Incidental fee, for residents of the state	10.00
for nonresidents	20.00
Diploma fee, at graduation	5.00

CORRESPONDENCE DEPARTMENT.

Incidental fee, for residents of the state, any school . . . \$10.00
for nonresidents of the state, any school, 15.00

A fee of \$1 per semester is required of each student to cover the expense of maintaining the general health of the University body.

Late registration and late enrollment in class also require a fee of \$1.

Announcements of laboratory and shop fees will be found under such courses as require them.

Living Expenses.

Information concerning the location of rooming and boarding places may be had from the secretary of the University Y. M. C. A., or at the office of the Registrar.

The average price of board, rooms, light and fuel may be placed at from \$5 to \$10 a week. Day board in private families and at city restaurants may be obtained for \$4.50 to \$5.00 a week. Day board in clubs varies from \$4 to \$5 a week. Furnished rooms, usually occupied by two students, range from \$4 to \$15 a month. Unfurnished rooms rent for \$1.50 to \$3 a month. Students who can supply their own furniture and buy and prepare provisions for the table can lessen expenses materially.

The following table shows the estimated expenses of a student of the University for a year, excluding clothing and traveling expenses; the expense varies with the course pursued, and also depends, naturally, upon the tastes and habits of the student:

Board	\$180.00 to \$220.00
Room	20.00 to 60.00
Books and stationery	8.00 to 40.00
Laundry	8.00 to 30.00
Matriculation and other fees	15.00 to 30.00
Incidentals	15.00 to 50.00
Totals	\$246.00 to \$450.00

The estimated expenses for students in the Medical, Law and Pharmacy schools of the University are included in the second table because of the higher incidental fee.

PRIZES AND AIDS.

The William J. Bryan Prize is derived from the income of \$250 which was presented to the University by Mr. Bryan in 1898, upon the condition that the proceeds should be used for "a prize for the best essay discussing the principles which underlie our form of government." The prize is offered in alternate years. The details of the contest are intrusted by the faculty of the College to a special committee.

The Hattie Elizabeth Lewis Memorial Prizes were established in 1911, in memory of Hattie Elizabeth Lewis, a former student of the University. They are open to all students of the University, and have since 1911 been given annually for the best essays on some phase of the general theme, "The Application of the Teachings of Jesus to the Practical Affairs and Relations of Life." They have amounted to \$250 annually.

Awards in 1917: First to Chas. H. Watson, a Junior in the College; second to Edna Osborne, a Graduate student; third to Elijah Jacobs, a Sopomore in the College; fourth to James A. Scott, a Sophomore in the College.

University Fellowships to the number of seventeen have been established for graduates of the University of Kansas and of other recognized colleges and universities who have distinguished themselves for scholarship. These fellowships are of \$280 each.

University Fellowships for Graduates of Kansas Colleges, ten in number, are offered yearly. These fellowships also amount to \$280 each, and one is offered to each of ten Kansas colleges chosen from year to year by the administrative committee of the Graduate School.

The **Charles S. Griffin Memorial Scholarship** was established in 1910 by Mrs. Mary Griffin, in memory of her son. The interest on \$1,000 is awarded annually to a student of the Collège. Resigned in 1917-'18 by Elijah Jacobs, on enlistment.

The **Marcella Howland Memorial Scholarship** of ninety dollars was established in 1900, by Mrs. Marcia Brown Howland, in memory of her daughter. It is open to young women of the Junior and Senior classes in the College. Held in 1917-'18 by Fern Emmons.

The **Frances Schlegel Carruth Scholarship in German** was established in 1909, in memory of Frances Schlegel Carruth. It is a Freshman scholarship of one hundred dollars, awarded to the graduate of the Lawrence high school who passes the best examination in two years' entrance German. Held in 1917-'18 by Dorothea Engel.

The **Women's Student Government Association Scholarship** of one hundred dollars, was established in 1910. It is open to young women of the Freshman class for the use in the Sophomore year. Held in 1917-'18 by Edna Atchison.

The **University Women's Association Scholarship** of one hundred dollars, was established in 1915. Held in 1917-'18 by Grace Bagby.

The **Eliza Matheson Innes Memorial Scholarship** of one hundred dollars was established in 1911, by Mr. George Innes, in honor of his wife. It is open to women students of the College above the Freshman year, or to women students of the Graduate School. Held in 1917-'18 by Emma Wedell.

The **Caroline Mumford Winston Memorial Scholarship** of thirty-five dollars was established in 1912, by Mr. Thomas Winston, in memory of his wife. It is open to women students of the College above the Freshman year, or to women students of the Graduate School. Held in 1917-'18 by Blanche Patterson.

The **Kansas Branch of the Association of Collegiate Alumnae** established a scholarship of fifty dollars in 1912. It is open to women students of the College above the Freshman year, or to women students of the Graduate School. Held in 1917-'18 by Minnie Swanson.

The Kansas City Branch of the Association of Collegiate Alumnæ established in 1914 two scholarships. These are loans of seventy-five dollars each, for five years without interest. Open to Junior and Senior women students from Kansas City, Kansas or Missouri. Held in 1917-'18 by Laura Ellen Bell and Alfrieda Florence Bircsak.

The Lucinda Smith Buchan Memorial Scholarship was established in 1900 in memory of Lucinda Smith, A. B., 1890, by the alumnæ members of the Pi Beta Phi Sorority. It is a loan of two hundred dollars for two years without interest, open to the young women of the Junior and Senior classes in the College. Held in 1917-'18 by Georgia A. Beebe.

The Frank Egbert Bryant Memorial Scholarship of fifty dollars, is open to women students of the College. Held in 1917-'18 by Vera May Harlan.

The Mrs. J. B. Watkins Scholarship of fifty dollars was established in 1915. It is awarded to a young woman of the Freshman class. Held in 1917-'18 by Ethel Minger.

The Doctor G. W. Maser Memorial Scholarship was established in 1916 by Mrs. Pearl Maser Johntz in memory of her father. It is open to young women of the University above the Freshman class. Held in 1917-'18 by Anne V. Benson.

Governor Arthur Capper has given a scholarship in the sum of fifty dollars. It is open to Freshman students in the School of Fine Arts. Held in 1917-'18 by Charles Kolacny.

Mrs. John T. Stuart, of Wellington, has given a scholarship in the sum of fifty dollars. It is open to Freshman students in the School of Fine Arts. Held in 1917-'18 by Lorna Marie Raub.

The Daughters of the American Revolution Scholarship was established in 1912 by the Betty Washington Chapter of the Daughters of the American Revolution. It is a loan of one hundred dollars without interest for three years after graduation, and open to young women of the Senior class. Held in 1917-'18 by Ellen Edmonson.

The Student Loan Fund was established in July, 1894, by the graduating class in College and Engineering of that year. It has increased through donations from subsequent classes and from private individuals until it amounts to about \$3,000. By the terms of the gift sums not to exceed \$100 may be loaned on bankable notes at four percent interest to students of the College and School of Engineering.

The James L. Mead Loan Fund of \$1,000 is held in trust on the same terms as those under which the student loan fund is operated.

An Aid Fund has been established for the assistance of worthy women students.

Employment. The University, through the Young Men's and the Young Women's Christian Associations, maintains an employment bureau. The secretaries of these associations may be addressed by students desiring employment.

ROOMING HOUSES.

Approved Rooming Houses for Men. Lists may be had from the Registrar, or the Secretary of the University Y. M. C. A., on application.

Approved Rooming Houses for Women. The University attempts to secure the best housing conditions available for its women students, through a committee under whose direction a list of rooming houses for women is prepared each year. The sanitary and social conditions of each house are investigated before it is placed on the approved list. Students are expected to room only in houses that are on this list. This list, together with regulations governing rooming places, may be had from the Registrar from July 1 to September 10, and thereafter from the Adviser of Women. By action of the Board of Administration, occupancy of rooms by women students shall be subject at all times to the approval of the Adviser of Women; further, women students are not permitted to lodge in houses in which men also lodge, unless for special reasons the rule is waived by the Adviser. The University expects students to keep their rooms for at least one semester or to make changes only on recommendation of the Adviser.

House Customs. The following customs have been adopted by the women of the University as organized in the Women's Student Government Association:

I. Rooming houses for women should be closed not later than 10:00 p. m. every night in the week, except when entertainments of general interest are held, and on Friday and Saturday nights, when the closing hour is 11:00.

II. Students' parties should be held on Friday or Saturday nights, or on nights preceding holidays, and on holidays.

III. Social engagements should not be made for the evenings of school days, except for Friday evenings, or for evenings preceding holidays, and on holidays.

Mrs. Eustace H. Brown, Adviser of Women of the University, exercises general supervision over all houses where women live, and gives general and individual attention to the needs of women students. She invites correspondence with parents and guardians, and gladly coöperates with them regarding the welfare of women students.

STUDENT HEALTH.

The University Health Service has been established for the purpose of safeguarding the health of the students. To accomplish this, its activities are carried on along three general lines: education, through lectures, publications and exhibits; sanitation, through supervising the students' environment both on and off the campus; and personal examination and advice.

Thorough physical examinations will be made of all students entering the University. The result of each examination is recorded and serves as a basis in determining the nature of exercise which the department of physical education will assign to the student. Whenever physical defects are found, suitable corrective exercise will be advised.

The University Health Service makes use of two hospitals. One is a well-equipped general hospital and dispensary, open to all students for consultation, advice, and treatment. The other is used for communicable cases where isolation is required.

The University Health Service, in conjunction with the Department of Physical Education, has the following objects in view:

1. The maintenance of the highest degree of health among all the students.
2. The reclamation of all physical defects so far as possible, and advice to those who possess irremedial defects as to their future conduct.
3. The harmonious and symmetrical development of the body and its functions.

Every student of the University is required to take the exercise suited to his individual needs as shown by the physical examination above mentioned.

THE UNIVERSITY IN RELATION TO WAR SERVICE.

The University has taken such measures as are possible to direct or assist the preparation of students for service in relation to the war. New courses have been arranged or former courses adapted for special instruction to the end. An adviser for men and one for women have been appointed, to assist students in finding opportunity for national service or choosing means of preparation for it. New courses are offered in Wireless Telegraphy, War Relief, Food Conservation, War French, Gas Engines and Military Science. Instruction is also offered, without University credit, in Stenography, Typewriting, and Filing. Courses in First Aid and Home Nursing, arranged to meet the Red Cross requirements, will be given before the end of the year. Opportunity for practical work, such as making surgical dressings and other forms of activity for the Red Cross, is provided for University women. All women students attend a course of lectures on Food and the War, given under direction of the Food Administration.

Students have been urged to select work from regular courses which will give training for scientific or technical positions under the government or for other forms of practical service.

SECTION II
Graduate School

(59)

FACULTY.

FRANK STRONG, Ph. D., Chancellor of the University, and President of the Faculty.

FRANK W. BLACKMAR, Ph. D., Dean of the Graduate School, and Professor of Sociology.

JAMES W. GREEN, A. M., Professor of Law.

EDGAR H. S. BAILEY, Ph. D., Professor of Chemistry and Metallurgy.

ALEXANDER M. WILCOX, Ph. D., Professor of Greek Language and Literature.

LUCIUS E. SAYRE, Ph. M., Professor of Pharmacy.

CHARLES G. DUNLAP, Litt. D., Professor of English Literature.

CARL A. PREYER, Mus. D., Professor of Piano and Composition.

OLIN TEMPLIN,* A. M., Professor of Philosophy.

EDWIN M. HOPKINS, Ph. D., Professor of Rhetoric and English Language.

FRANK H. HODDER, Ph. M., Professor of American History and Political Science.

ERASMUS HAWORTH, Ph. D., Professor of Geology and Mineralogy.

ARTHUR T. WALKER, Ph. D., Professor of Latin Language and Literature.

WILLIAM C. STEVENS,* M. S., Professor of Botany.

ARVIN S. OLIN, LL. D., Professor of Education.

WILLIAM A. GRIFFITH, Professor of Drawing and Painting.

EUGENIE GALLOO, A. M., Professor of Romance Languages and Literatures.

WILLIAM L. BURDICK, Ph. D., Professor of Law.

CHARLES S. SKILTON, A. B., Professor of Organ, Theory of Music, and Music History.

IDA H. HYDE, Ph. D., Professor of Physiology.

WILLIAM H. JOHNSON, A. M., Professor of Education.

SAMUEL J. HUNTER, A. M., Professor of Entomology.

WILLIAM E. HIGGINS,* LL. B., Professor of Law.

PERLEY F. WALKER,* M. M.E., Professor of Industrial Engineering.

MERVIN T. SUDLER, M. D., Professor of Surgery.

L. D. HAVENHILL, Ph. M., Professor of Pharmacy.

FREDERICK E. KESTER, Ph. D., Professor of Physics.

GEORGE C. SHADD, E. E., Professor of Electrical Engineering.

HAMILTON P. CADY, Ph. D., Professor of Chemistry.

JOHN SUNDWALL, M. D., Professor of Anatomy.

FREDERICK H. BILLINGS,* Ph. D., Professor of Bacteriology.

HERBERT A. RICE, C. E., Professor of Mechanics and Structural Engineering.

BENNET M. ALLEN, Ph. D., Professor of Zoölogy.

EDMUND H. HOLLANDS, Ph. D., Professor of Philosophy.

HENRY W. HUMBLE, J. D., Professor of Law.

EDWARD D. OSBORN, Professor of Law.

* Absent on leave, 1917-'18.

- FRANK B. DAINS, Ph. D., Professor of Chemistry.
CLEMENT C. WILLIAMS,* C. E., Professor of Railway Engineering.
ELMER F. ENGEL,† A. M., Professor of German.
JOHN N. VAN DER VRIES,* Ph. D., Professor of Mathematics.
RALPH H. MAJOR, M. D., Professor of Bacteriology and Pathology.
WILLIAM B. DOWNING, Professor of Voice and Public-school Music.
ELIZABETH C. SPRAGUE,* Professor of Home Economics.
RAPHAEL D. O'LEARY, A. B., Professor of English.
RAYMOND A. SCHWEGLER, A. M., Professor of Education.
ARTHUR J. BOYNTON, A. M., Professor of Economics.
CHARLES H. ASHTON, Ph. D., Professor of Mathematics.
ARTHUR C. TERRILL, A. M., Professor of Mining.
HAROLD L. BUTLER, A. B., Professor of Voice.
ARTHUR NEVIN,* Professor of Ensemble and Music Extension.
HARRY C. THURNAU, Ph. D., Professor of German.
FREDERICK J. KELLY, Ph. D., Professor of Education.
RAYMOND A. KENT, A. M., Professor of Education.
DAVID L. PATTERSON, B. S., Professor of European History.
WILLIAM A. WHITAKER,* A. M., Professor of Metallurgy.
LEON N. FLINT, A. B., Professor of Journalism.
FREDERICK H. SIBLEY, M. E., Professor of Mechanical Engineering.
GEORGE E. COGHILL, Ph. D., Professor of Anatomy.
OLE O. STOLAND, Ph. D., Professor of Physiology.
WALTER S. HUNTER,* Ph. D., Professor of Psychology.
WILLIAM M. HEKKING, B. P., Professor of Drawing and Painting.
CLARENCE A. DYKSTRA, A. B., Professor of Political Science.
C. FERDINAND NELSON, Ph. D., Professor of Physiological Chemistry.
MILES W. STERLING, A. M., Associate Professor of Greek.
HANNAH OLIVER, A. M., Associate Professor of Latin.
SELDEN L. WHITCOMB, A. M., Associate Professor of English Literature.
MARTIN E. RICE, M. S., Associate Professor of Physics.
LOUIS E. SISSON, A. M., Associate Professor of Rhetoric.
ALBERTA L. CORBIN,* Ph. D., Associate Professor of German.
WILLIAM J. BAUMGARTNER, A. M., Associate Professor of Zoölogy.
HENRY O. KRUSE, A. M., Associate Professor of German.
CLARENCE C. CRAWFORD, Ph. D., Associate Professor of History.
EARL W. MURRAY, A. B., Associate Professor of Latin.
WILLIAM S. JOHNSON, Ph. D., Associate Professor of English Literature.
VICTOR E. HELLEBERG, A. B., Associate Professor of Sociology.
MARGARET LYNN, A. M., Associate Professor of English Literature.
ELISE NEUEN SCHWANDER, Ph. D., Associate Professor of Romance Languages.
ARTHUR L. OWEN, A. M., Associate Professor of Romance Languages.
HERMAN C. ALLEN, A. M., Associate Professor of Chemistry.
WILLIAM W. DAVIS, Ph. D., Associate Professor of American History.
CHARLES A. SHULL, Ph. D., Associate Professor of Plant Physiology and Genetics.
ULYSSES G. MITCHELL, Ph. D., Associate Professor of Mathematics.

* Absent on leave, 1917-'18.

† Absent on leave, first semester.

- ALFRED H. SLUSS, B. S., Associate Professor of Mechanical Engineering.
 FLOYD C. DOCKERAY, Ph. D., Associate Professor of Psychology.
 HERBERT W. NUTT, Ph. D., Associate Professor of Education.
 JOSEPH G. BRANDT, Ph. D., Associate Professor of Greek.
 NOBLE P. SHERWOOD, A. M., Associate Professor of Bacteriology.
 HERBERT B. HUNGERFORD, A. M., Associate Professor of Entomology.
 RALPH E. CARTER, A. M., Associate Professor of Education.
 ELLIS B. STOFFER, Ph. D., Associate Professor of Mathematics.
 BLAINE F. MOORE, Ph. D., Associate Professor of Political Science.
 EDWIN F. STIMPSON, B. S., Assistant Professor of Physics.
 JAMES E. TODD, A. M., Assistant Professor of Geology and Mineralogy.
 ALBERT M. STURTEVANT, Ph. D., Assistant Professor of German.
 LULU GARDNER, A. B., Assistant Professor of Rhetoric.
 CLIFFORD C. YOUNG, A. B., Assistant Professor of Chemistry.
 ARTHUR MITCHELL, Ph. D., Assistant Professor of Philosophy.
 FREDERICK A. J. COWPER, A. M., Assistant Professor of Romance Languages.
 WILLIAM R. B. ROBERTSON, Ph. D., Assistant Professor of Zoölogy.
 THEODORE T. SMITH,* A. M., Assistant Professor of Physics.
 PAUL V. FARAGHER, Ph. D., Assistant Professor of Chemistry.
 EDMOND D. CRESSMAN, Ph. D., Assistant Professor of Latin.
 WALTER S. LONG, A. M., Assistant Professor of Chemistry.
 NADINE NOWLIN, A. M., Assistant Professor of Zoölogy.
 GEORGE W. STRATTON, Ph. D., Assistant Professor of Chemistry.
 JOSEPH F. WELKER, M. of C. E., Assistant Professor of Civil Engineering.
 WILLIAM M. DUFFUS, A. M., Assistant Professor of Economics.
 GRACE M. CHARLES, Ph. D., Assistant Professor of Botany.
 JACOB O. JONES, M. S., Assistant Professor of Hydraulics.
 JOSEPHINE BURNHAM, Ph. D., Assistant Professor of English.
 FRANK E. MELVIN, Ph. D., Assistant Professor of European History.
 WILLIAM L. EIKENBERRY,* B. S., Assistant Professor of the Teaching of Biological Sciences.
 FREDERICK W. BRUCKMILLER, A. M., Assistant Professor of Chemistry.
 AMIDA STANTON, A. M., Assistant Professor of Romance Languages.
 SOLOMON LEFSCHETZ, Ph. D., Assistant Professor of Mathematics.
 RICHARD LEONIDAS GRIDER, Assistant Professor of Mining Engineering.
 MANUAL C. ELMER, Ph. D., Assistant Professor of Sociology.
 RAYMOND C. MOORE, Ph. D., Assistant Professor of Geology and Paleontology.
 WINTHROP P. HAYNES, Ph. D., Assistant Professor of Mineralogy and Petrology.
 JOHN ISE, Ph. D., Assistant Professor of Economics.
 CLARENCE ESTES, B. S., Assistant Professor of Chemistry.
 WALTER B. BODENHAFFER, A. M., Instructor in Sociology.
 PETER A. F. APPLEBOOM,* Instructor in Romance Languages.
 DONALD G. PATERSON,* A. M., Instructor in Psychology.
 ARTHUR J. MIX, Ph. D., Instructor in Plant Pathology.
 S. HERBERT HARE, Lecturer on Landscape and Garden Design.

* Absent on leave, 1917-'18.

ADMINISTRATIVE COMMITTEE.

FRANK W. BLACKMAR.

FRANK H. HODDER.

ARVIN S. OLIN.

S. L. WHITCOMB.

H. P. CADY.

UNIVERSITY FELLOWS.

- *CHAS. E. BAYSINGER.—*Bacteriology*.
 *MARY LOUISE GOVIER.—*Botany*.
 OWEN HARRISON LOVEJOY.—*Botany*.
 *CARL OTTO ANDERSON.—*Chemistry*.
 *RALPH HENRY PRICE.—*Chemistry*.
 *R. VIRGIL COOK.—*Chemistry*.
 *ALBERT BRISTOW IRWIN.—*Economics*.
 *CARL L. JOLLIFFE.—*Economics*.
 HAROLD HOPKINS LYTLE.—*Economics*.
 J. A. BLAIR.—*Education*.
 MARY LILLIAN SCHENK.—*Education*.
 HARRY LEE FACKLER.—*Entomology*.
 *EDNA PEARL OSBORNE.—*English*.
 FRED STANLEY RODKEY.—*European History*.
 *FORREST JENNINGS MILLER.—*Geology*.
 *HOWARD WHITE.—*History*.
 *IVA BERNICE TESTERMAN.—*History*.
 IRMA BAUMAN SPANGLER.—*History*.
 *MILDRED DONOHUE.—*Home Economics*.
 HAZEL HORSLEY.—*Mathematics*.
 *CHAS. EUGENE HASKINS.—*Physics*.
 LOUIS M. HULL.—*Physics*.
 *HUBERT SHEPPARD.—*Philosophy*.
 *CARL A. SWANSON.—*Romance Languages*.
 FRANCES MAUD ELLIS.—*Sociology*.
 *GEORGE SYLVESTER TERRY.—*Zoölogy*.
 LUCILLE WITTE.—*Zoölogy*.

FELLOWS FROM KANSAS COLLEGES.

- BEULAH MAY ARMSTRONG.—*Baker University*.
 *ROBERT C. SWENSON.—*Bethany College*.
 MARGARET STEWART.—*Cooper College*.
 SAMUEL SYLVESTER KIRBY.—*College of Emporia*.
 MAY WEISS.—*Fairmount College*.
 SIMON P. SWANSON.—*Friends University*.
 ALICE NADINE VOGT.—*McPherson College*.
 ALFRED J. MILLER.—*Midland College*.
 LETTIE ARCHER.—*Ottawa University*.
 ORRA PRATHER.—*Southwestern College*.
 *JOHN C. WARNER.—*Washburn College*.
 ANNA MARM.—*Bethany College*.

* Resigned.

THE GRADUATE SCHOOL.

The Graduate School was organized in 1896-'97, for the purpose of giving opportunity for students to pursue advanced work, and to encourage independent and scientific investigation. Courses of study for advanced degrees are offered in all of the schools of the University, nearly every department being represented. Through the Graduate School all the advanced degrees of the University are granted.

REQUIREMENTS FOR ADMISSION.

Admission to the Graduate School ordinarily is granted to graduates of this University holding the bachelor's degree, and to graduates of other colleges and universities of good standing on presentation of proper evidence of scholarship and testimonials of good character.

REGISTRATION.

Students wishing to register should first apply to the Dean of the Graduate School. When it is ascertained in what department the student desires to do his major work, the Dean will refer him to the head of that department, who will select the courses, after consultation with the student. The student will then submit the courses to the Dean, and if they are approved the applicant will be given a card permitting him to register in the office of the Registrar. Work to be counted as graduate work is specified in the Catalog, and must be designated as graduate on the enrollment card filed in the Registrar's office.

DEGREES GRANTED.

ACADEMIC DEGREES: Master of Arts, Master of Science, Doctor of Philosophy.

PROFESSIONAL DEGREES: Civil Engineer, Mechanical Engineer, Mining Engineer, Chemical Engineer, Electrical Engineer, Master of Science in Education.

The Requirements for the Degrees of Master of Arts and Master of Science.

When the candidate for the master's degree has selected the department in which his major work is to be done, the head of that department, in consultation with the candidate, approves his work for the master's degree, which may be confined to the department of the major study or may be selected from that and not more than two other departments. The decision of the head of the department is subject to the veto of the Dean of the Graduate School, but appeal may be made from the decision of the Dean to the Graduate Faculty. The head of the major department approves the courses selected for each semester on a card provided for the same, which is kept on file at the Dean's office. If the student subsequently changes his selection of a major department, the graduate work already done cannot be counted toward the master's degree unless approved by the head of the new major department.

The master's degree will be granted only after at least one full year's graduate work. The candidate must have completed with high credit

thirty hours of work chosen from the courses open to graduates, published in the catalog, or approved by the departments concerned and the administrative committee. Courses for which a professional degree is given will not be counted toward this degree. Not more than sixteen hours' credit can be given in one term.

Ordinarily each candidate for the master's degree is required to present a thesis to the head of the major department. The thesis must embody the results of scholarly research on some topic connected with the candidate's major study. The thesis must be completed and given to the head of the department under whose direction it has been done, not later than May 15 preceding the June in which the candidate expects to receive his degree. After examining the thesis, the head of the department shall report his acceptance to the Registrar and deposit the thesis in the office of the Dean of the Graduate School. The thesis must be typewritten and bound in cloth. In special cases, where it seems advisable for the candidate to devote all of his time to regular class work, not involving research, on the recommendation of the head of the department and the consent of the Dean, the requirement of a thesis may be waived.

Ordinarily the candidate for the master's degree is expected to spend a minimum of one year in resident graduate work at some university, the latter half of which at least must be done in residence at the University of Kansas. These regulations permit the acceptance of graduate work done in other institutions to the extent of not more than half of the work, but all credits offered are subject to the approval of the administrative committee.

Engineering Degrees.

Graduates in engineering in this University, and masters of science who have received their degrees through the Graduate Faculty, having majored in engineering, are eligible to the professional degree of civil engineer, electrical engineer, mechanical engineer, mining engineer, or chemical engineer, whichever is appropriate to the undergraduate courses taken. Candidates for these degrees must have spent at least three years' actual time in professional practice, in positions of responsibility, in design, construction or operation of engineering works, and must furnish detailed and satisfactory evidence as to the nature and extent of this practice.

Each must submit an engineering thesis, accompanied by detailed explanations, drawings, specifications, estimates, etc., and embodying the results of their own work or observation. If approved, the thesis and all accompanying material become the property of the University.

All theses for professional degrees must be delivered to the Dean of the School of Engineering on or before the 15th day of May.

Doctor of Philosophy.

The degree of doctor of philosophy will be granted for advanced scholarship, and the performance of independent work in some special line, under the following conditions:

1. The candidate must be a baccalaureate graduate of some college or university of good standing; and he must give satisfactory evidence to the faculty of the Graduate School that he possesses an adequate preparation for graduate work.

2. He must make application to the Dean of the Graduate School before the 1st day of October preceding the commencement at which he intends to present himself for the degree, and must then give satisfactory evidence of his ability to read such German and French as may be necessary for the proper prosecution of his studies.

3. He must have spent at least three full college years in resident graduate work at this or some other approved university, the last year of

which he must have spent as resident student of this University. The time spent in attaining the degree of A. M. may be counted toward satisfying this time condition.

4. He must present a thesis showing the result of original research of a high character, and must pass acceptable examinations, both written and oral, in one chief or major study and two allied, subsidiary or minor studies, not more than two of which may be in the same department. The oral examination is given by a committee appointed by the Dean. The faculty are invited to be present. This thesis, embodying the results of original research in some subject connected with his major study, must be presented to the head of the department in which the work was done, not later than the 1st of May preceding the commencement at which the degree is to be conferred, and if approved by him it is placed on file for inspection in the office of the Dean of the Graduate School for at least two weeks. If the thesis is finally approved, the candidate must, before receiving the degree, deliver at least fifty printed copies of it to the Librarian of the University, or give proper security for the printing of that number; but if the thesis has already been printed, ten copies only need be deposited with the Librarian.

UNIVERSITY FELLOWSHIPS.

General Fellowships.

For the encouragement of advanced study and research, the University of Kansas has established seventeen fellowships for graduates of special merit. Each fellowship entitles the holder to \$300. Fellows are expected to devote their time to investigation and research leading to an advanced degree, except that they may be required to give not exceeding six hours of service per week in the department to which they are assigned. These fellowships are awarded to graduates of the University of Kansas, and of other colleges and universities of good standing, who have distinguished themselves for special scholarship and marked ability.

For the year 1918-'19 these fellowships may be awarded to the best qualified candidates applying in one of the departments enumerated below.

Applications for fellowships may be filed, on blanks provided, with the Dean of the Graduate School on or before the first day of March of the collegiate year preceding that during which the fellowship is desired. Such applications may be accompanied by recommendations of instructors and by specimens of original work of the applicants, either published or in manuscript.

The applications of the various candidates are referred to the administrative committee of the Graduate School, which acts as a fellowship committee in consultation with the heads of the departments in which fellowships are granted. The committee, after consideration of the relative merits of all applicants, nominates the successful candidates and recommends them to the Board of Administration for election. Fellows are elected for a term of one year. However, in special cases, they may be reelected for one additional year.

Fellowships for Graduates of Kansas Colleges.

In order to promote advanced study at the University of Kansas, and to encourage the graduates of Kansas colleges and universities to continue their work, the University of Kansas offers one fellowship of \$280 to each of ten Kansas colleges. The colleges to which fellowships were granted for 1917-'18 were: Baker University, Bethany College, Emporia College, Fairmount College, Friends University, Midland College, McPherson College, Ottawa University, Southwestern College, Washburn College, and Cooper College. This list is subject to change each year by

the administrative committee of the Graduate School after consultation with the committee of visitation of colleges.

Candidates for fellowships are to be nominated by the faculties of the respective colleges, from the classes graduating in June before the September when they are to enter upon their fellowships. However, in case there are no satisfactory candidates in the classes referred to, candidates may be nominated from other graduating classes. It is understood that the candidate shall be from among those attaining high scholarship in the respective classes. On or before the first day of March of the year in which the fellowship is awarded, the president of the college receiving the fellowship shall send the name of the candidate nominated by the college faculty or its committee, with a statement of his qualifications, to the Dean of the Graduate School of the University of Kansas.

The candidate's application will be considered by the administrative committee of the Graduate School as in case of other fellowships, and if satisfactory he will be recommended to the Board of Administration for election. A fellow so elected may choose his work, in accordance with the rules of the Graduate School, in any of the departments offering work in the Graduate School.

Each fellow may be called upon for not more than four hours' service per week in the department in which he chooses his major work.

DEPARTMENTS AND EQUIPMENT.

The following departments offer graduate work in the University. In the majority of them the facilities are adequate for thorough preparation for the doctor's degree, and in all of them the facilities are excellent for work leading to the master's degree. All the courses named are well equipped for graduate instruction. Laboratories and libraries are ample for this purpose. Especial opportunity is given for research and original investigation.*

Anatomy.	Greek.
Bacteriology.	History.
Bacteriology and Pathology.	Home Economics.
Botany.	Journalism.
Chemistry.	Latin Language and Literature.
Economics and Commerce.	Law.
Education.	Mathematics.
Engineering.	Pharmaceutical and Biological
Engineering—Mechanics.	Chemistry.
Engineering, Civil.	Philosophy and Psychology.
Engineering, Electrical.	Physics and Astronomy.
Engineering, Mechanical.	Physiology.
Engineering, Mining.	Political Science.
English Language and Literature.	Romance Languages and
Entomology.	Literatures.
Fine Arts.	Sociology.
Geology and Mineralogy.	Zoölogy.
Germanic Languages and	
Literatures.	

* For description of equipment of the departments, see College Section.

DESCRIPTION OF COURSES*

ANATOMY.

Professors: SUNDWALL, COGHILL.
Demonstrator: E. SMITH.

The minimum requirement for entrance into graduate courses is thirty-five hours of biological work, including the equivalents of zoölogy 1 or 2 and 3, and anatomy 1, 2, 3, 4, 5, 6, 7, 8, 9. A reading knowledge of both French and German is essential.

100.—COMPARATIVE NEUROLOGY. Five hours credit. Both semesters, by appointment. Fee, \$3. The evolution of the structure and function of the vertebrate nervous system. Coghill.

101.—RESEARCH WORK IN NEUROLOGY. Five hours credit. Both semesters. *Admission may be obtained to this course only after consultation.* A comprehensive knowledge of general anatomy, physiology, and neurology is essential. Coghill.

102.—ANATOMICAL CORRELATION. Two hours credit. Both semesters. Normal functions are studied from the point of view of the reflex mechanism. Phylogenetic and ontogenetic considerations. Assignments of individual problems and written reports. Coghill.

103.—PHYSIOLOGICAL HISTOLOGY. Five hours credit. First semester. Fee, \$3. Changes in the cell occasioned by various stimuli will be studied by means of microchemical staining. Sundwall.

104.—ADVANCED WORK IN ANATOMY. Five hours credit. Both semesters. This course is especially designed for those wishing to do special work in gross or microscopic anatomy. Sundwall.

105.—RESEARCH WORK. Five hours credit. Both semesters. Various problems for research will be assigned to students who are candidates for the higher degrees. Sundwall, Coghill.

106.—SEMINAR. Three hours credit. Both semesters. In this course subjects of current interest are discussed as they appear in the various journals. Sundwall, Coghill.

The following courses are open to graduate students from other departments who may wish to elect certain courses in the department of anatomy.

150-153.—HUMAN DISSECTION. A complete dissection of all structures. Sundwall, Coghill, Smith.

Course 150.—Dissection of arm and thoracic wall. Three hours credit. Fee, \$5.

Course 151.—Dissection of leg, perineum and abdominal wall. Three hours credit. Fee, \$5.

Course 152.—Dissection of thoracic and abdominal viscera. Four hours credit. Fee, \$5.

* DAYS OF MEETING. Courses giving five hours credit meet daily from Monday to Friday, inclusive.

Courses giving three hours credit meet on Monday, Wednesday, and Friday, unless otherwise specified.

Courses giving two hours credit meet on Tuesday and Thursday, unless otherwise specified.

Courses numbered from 100 to 149 are for graduates only. All others are offered in the College or the professional schools; detailed descriptions of these will be found in the separate catalogs.

Course 153.—Dissection of head and neck. Four hours credit.
Fee, \$5.

154.—HUMAN OSTEOLOGY. One hour credit. No fee. A systematic study of the human skeleton. Supplemented by drawings, clay modeling, etc. Smith.

155.—TOPOGRAPHICAL ANATOMY. Three hours credit. Fee, \$3. A laboratory course in human anatomy, including dissections, study of models, preparations, cross sections. Prerequisites, courses 1, 2, 3, 4, 5. (At Rosedale.) Sundwall.

156.—HISTOLOGY AND SPLANCHNOLOGY. Five hours credit. Fee, \$5. A brief course in the structure of the cell, followed by a systematic study of the structure of organs. Coghill and assistants.

157.—EMBRYOLOGY. Two hours credit. Fee, \$3. The study of the embryology of the chick and pig, followed by a consideration of human embryology. Coghill and assistants.

158.—NEUROLOGY. Three hours credit. Fee, \$3. Gross and microscopic anatomy of the nervous system. Coghill and assistants.

BACTERIOLOGY.

Professor: BILLINGS.*

Associate Professor: SHERWOOD.

Instructors: TREECE, DOWNS.

100.—RESEARCH IN BACTERIOLOGY. Two or more hours credit. By appointment. Graduates taking this course must satisfy the instructor that they are able to carry on original investigation in the special field selected. Fee, \$1 for each hour of enrollment.

Sherwood and the instructor directly concerned.

150.—GENERAL BACTERIOLOGY. Five hours credit. Both semesters. Fee, \$5. Sherwood, Treece, Downs.

153.—BACTERIOLOGY OF FOODS. Five hours credit. Second semester. Fee, \$5. Treece.

154.—SPECIAL METHODS IN BACTERIOLOGY. Five hours credit. First semester. Fee, \$5. Sherwood, Downs.

155.—BACTERIOLOGY OF SOILS. Two hours credit. Second semester. Fee, \$2. Offered 1919-'20. Treece.

157.—IMMUNITY. Five hours credit. Second semester. Fee, \$5. Sherwood, Downs.

158.—PATHOGENESIS. Five hours credit. First semester. Fee, \$5. Offered 1919-'20. Sherwood.

160.—BACTERIOLOGICAL JOURNALS. One hour credit. First semester, by appointment. Sherwood.

161.—SPECIAL PROBLEMS IN BACTERIOLOGY. Two to ten hours credit. Either semester, by appointment. Fee, \$1 for each hour.

Sherwood and the instructor directly concerned.

BACTERIOLOGY AND PATHOLOGY (ROSEDALE).

(MEDICAL.)

Professor: MAJOR.

Associate Professor: TRIMBLE.

101.—ADVANCED BACTERIOLOGY. By appointment. Includes the more difficult technical procedure and problems of immunity, serology, vaccines, etc. Major, Trimble.

102.—PATHOLOGY. By appointment. Research work in the various branches of pathology and immunology. Major, Trimble.

* Absent on leave, 1917-'18.

102.—SPECIAL PATHOLOGY. Three hours credit. First Semester, Monday and Wednesday, 1 to 4. Recitations and laboratory. This course takes up the study of special pathology as illustrated by gross and microscopic specimens. Major.

BOTANY.

Professor: STEVENS.*

Associate Professor: SHULL.

Assistant Professor: CHARLES.

Instructor: MIX.

Lecturer: HARE.

100.—MORPHOLOGY AND PHYSIOLOGY OF THE PLANT CELL. Five or ten hours credit. First and second semester, or both semesters, by appointment. Fee, \$1. A study of cell characters, adaptation to specific functions, and behavior under varying environment; nuclear and cell division; reproduction. Stevens.

101.—PLANT ECOLOGY. Three hours, five hours, or ten hours credit. Throughout the year, by appointment. The relation of plants to their environment. Field work and reading. Warming's, Schimper's, Clements' and Cowles' texts, and current literature Stevens.

102.—RESEARCH IN PLANT HISTOLOGY. Both semesters, by appointment. Fee, \$1. Stevens.

103.—RESEARCH IN PLANT PHYSIOLOGY. Both semesters, by appointment. Open only to graduate students specializing in plant physiology, and who expect to take advanced degrees in the department with physiology as the major subject. Registration only after consultation. Shull.

104.—BOTANICAL CONFERENCE. One hour credit. By appointment. Review and discussion of current botanical work. Reports on assigned subjects.

150.—SYSTEMATIC BOTANY. Five hours credit. First semester. Fee \$1. Charles.

152.—PLANT GENETICS. Five hours credit. Second semester. Fee, \$1. Shull.

153.—PLANT PHYSICS. Five hours credit. First semester. Fee, \$2. Shull.

154.—PLANT CHEMICS. Five hours credit. Second semester. Fee, \$2.50 Shull.

155.—MORPHOLOGY OF THALLOPHYTES. Three hours or five hours credit. Second semester, by appointment. Fee, \$1. Charles.

156.—MORPHOLOGY OF FUNGI. Three hours credit. Second semester. Fee, \$2. Charles.

157.—MORPHOLOGY OF BRYOPHYTES AND PTERIDOPHYTES. Three hours credit. First semester. Fee, \$2. Charles.

158.—PROBLEMS IN THE MORPHOLOGY OF SPERMATOPHYTES. Five hours credit. First or second semester, or both, by appointment. Fee, \$1. Stevens.

159.—PROBLEMS IN THE MORPHOLOGY OF THALLOPHYTES AND ARCHEGONIATES. Five hours credit. First or second semester, by appointment. Fee, \$1. Charles.

160.—AGRICULTURE. Three hours credit. First semester. Fee, \$1. Shull.

161.—TREES AND SHRUBS. Three hours credit. First semester. Stevens.

162.—PLANT PATHOLOGY. Five hours credit. First semester. Fee, \$1. Mix.

* Absent on leave, first semester.

163.—METHODS IN PLANT PATHOLOGY. Five hours credit. Second semester. Fee, \$2.00. Mix.

164.—PROBLEMS IN PLANT PATHOLOGY. Three to five hours credit. Both semesters. Fee, \$1. Mix.

Graduate credit in the Botany Department for course 160 will be allowed only on the satisfactory completion of original investigations on some agricultural topic chosen in consultation with the department and the presentation of a thesis embodying the results of the investigation.

CHEMISTRY.

Professors: BAILEY, CADY, DAINS, WHITAKER.

Associate Professor: ALLEN.

Assistant Professors: YOUNG, FARAGHER, STRATTON, LONG, BRUCKMILLER, ESTES.

PREREQUISITES. Students who expect to take a graduate major in chemistry and others who wish to do advanced work for graduate credit must present not less than the substantial equivalent of undergraduate courses 1, 2, 3, 51 and 61 or 62 before beginning their graduate work.

FEES. In laboratory courses a fee sufficient to cover expenses will be charged.

100.—ADVANCED QUALITATIVE AND SPECTRAL ANALYSIS.* Three hours credit. Second semester, by appointment. This course covers the ordinary methods of qualitative analysis as applied to the rarer elements and compounds, as well as training in the use of the spectroscope and spectrograph in the qualitative and quantitative examination of substances. Cady.

101.—MICRO-CHEMICAL ANALYSIS. Two hours credit. Second semester, by appointment. A laboratory course in qualitative analysis, identifying the substances by means of the microscope. Prerequisite, course 51. Allen.

102.—ADVANCED TOPICS IN INORGANIC CHEMISTRY. Two hours credit. First semester. Faragher.

103.—INORGANIC PREPARATIONS. (Advanced). Two or three hours credit. Second semester. Faragher.

104.—INORGANIC CHEMISTRY RESEARCH. Five hours credit. Both semesters. Faragher.

105.—RADIOCHEMISTRY AND RADIOACTIVITY. Three hours credit. Second semester, alternate years, by appointment. Lectures, recitations and laboratory experiments dealing with the chemistry of the radio-elements, their relation to the periodic system, and the transformations. It is recommended that the course be preceded by course 153 in the Department of Physics. Faragher.

110.—HISTORY OF CHEMISTRY. Two hours credit. Second semester. A course in the history of chemistry and the development of chemical theories. Lectures, library work, and the presentation of reports. The complete course requires two years, the first bringing the subject down to 1820 and the second from that time to date. Dains.

111.—CHEMICAL SEMINAR. One hour credit. Each semester, by appointment. A review of recent literature. Required of all graduate students majoring in chemistry.

First semester: Inorganic and physical chemistry. Cady.

Second semester: Organic chemistry and allied topics. Dains.

152.—QUANTITATIVE ANALYSIS. Two, three, or five hours credit. Either semester. Allen.

* In the Chemistry department, starred courses above 149 as well as courses from 100 to 149 are graduate only.

- 152A.—SANITARY WATER ANALYSIS. Three hours credit. Second semester, 10 to 12. Prerequisite, course 51. Bruckmiller.
- 152B.—BOILER WATER ANALYSIS. Two hours credit. Second semester, 10 to 12. Prerequisite, course 51. Bruckmiller.
- 152C.—GAS ANALYSIS. Two hours credit. First semester, by appointment. Prerequisite, course 51. Allen.
- 152D.—FOOD ANALYSIS. Three hours credit. Both semesters, by appointment. Prerequisite, courses 51 and 61 or 62. Long.
- 152E.—OIL ANALYSIS. Two hours credit. First semester, by appointment. Prerequisite, course 51. Allen.
- 152F.—IRON AND STEEL ANALYSIS. Two hours credit. Second semester, by appointment. Prerequisite, course 51. Allen.
- 152G.—THE CHEMISTRY OF MILLING AND BAKING. Two hours credit. Second semester, by appointment. Prerequisites, courses 51 and 61 or 62. Long.
- 152H.—INDUSTRIAL ORGANIC ANALYSIS. Two hours credit. Second semester, by appointment. Prerequisites, courses 51 and 61 or 62. Estes.
- 152 I.—WET ASSAYING. Two hours credit. Second semester, by appointment. Prerequisite, course 51. Allen.
- 152J.—ELECTROLYTIC ESTIMATION OF METALS. Two hours credit. Second semester, by appointment. Prerequisite, course 51. Allen.
- 153.—ASSAYING AND METALLURGICAL ANALYSIS. Three or five hours credit. Second semester, 1 to 5, and by appointment. Whitaker, Estes.
- 155.—ANALYTICAL CHEMISTRY RESEARCH.* Five hours credit. Both semesters. Bailey and Allen.
- 157.—PHYSICOCHEMICAL METHODS OF ANALYSIS.* Two hours credit. First semester, by appointment. This course furnishes a training in the use of the methods of physical chemistry in analysis. The experiments will be carried out with the aid of the polariscope, refractometer, colorimeter, and nephelometer. Conductivity measurements and methods adapted from the phase law will also be used. Cady.
- 163.—ADVANCED ORGANIC CHEMISTRY. Five hours credit. Second semester, M. W. F., at 9; laboratory by appointment. Dains.
- 164.—ORGANIC PREPARATIONS (advanced).* Five hours credit. Either semester, by appointment. Must be preceded by course 163 or its equivalent. A study of organic synthetical methods and ultimate organic analyses. Dains.
- 165.—ORGANIC CHEMISTRY.* Five hours credit. Either semester, by appointment. A research course. This course offers, to those who have proper preparation, a chance for extended study and original investigation. Dains.
- 166.—ADVANCED TOPICS IN ORGANIC CHEMISTRY.* Two hours credit. First semester. Subjects to be discussed are as follows: 1916-'17, dyes; 1917-'18, nitrogen derivatives; 1918-'19, terpenes and sugars. Dains.
- 170.—PHYSICAL CHEMISTRY. Five hours credit. First semester, at 9. Cady.
- 171.—PHYSICAL CHEMISTRY II. Five hours credit. Second semester, at 9. Cady.
- 172.—ELECTROCHEMISTRY.* Five hours credit. Second semester, by appointment. A laboratory course on the reactions involving oxidation and reduction, electrosyntheses and decompositions, the preparation of chemicals, the reduction of metals from their ores, and the purification of metallurgical products. Prerequisite, course 170. Faragher.

173.—CHEMICAL STATICS AND DYNAMICS.* Three hours credit. Second semester, by appointment. A study of the manner in which chemical reactions take place, and the equilibria which result, from the standpoint of reaction velocities. Prerequisites: General physics, calculus, physical chemistry 170 or 171, and organic chemistry. Cady.

174.—THE PHASE LAW.* Two hours credit. Second semester, by appointment. A study of chemical equilibria from the standpoint of the phase law of Gibbs. Prerequisite, course 171. Cady.

175.—ADVANCED TOPICS IN PHYSICAL CHEMISTRY.* Two hours credit. Second semester, by appointment. Different topics will be taken up each year for a cycle of years. The topic for 1917-18 will be "Colloid Chemistry." Cady.

176.—PHYSICAL CHEMISTRY.* Five hours credit. Either semester, by appointment. A research course extending over two or more semesters. An opportunity is offered, to those who are sufficiently advanced, to carry on investigations in this branch of chemistry. Cady.

180.—INORGANIC INDUSTRIAL CHEMISTRY. Three hours credit. Second semester, at 11. Whitaker and Estes.

181.—ORGANIC INDUSTRIAL CHEMISTRY. Three hours credit. First semester, at 9. Whitaker.

182.—INDUSTRIAL CHEMISTRY RESEARCH.* Five hours credit. Both semesters. Whitaker.

190.—METALLURGY I. Three hours credit. First semester, at 11. Whitaker.

191.—METALLURGY II. Three hours credit. Second semester, at 9. Whitaker.

192.—METALLURGICAL LABORATORY. Two hours credit. First semester, by appointment. Estes.

193.—GENERAL METALLURGY. Two hours credit. First semester, at 11. Whitaker.

195.—METALLOGRAPHY.* Two hours credit. Second semester, by appointment. Laboratory work and conferences. Whitaker.

199.—TEACHERS' COURSE IN CHEMISTRY. Two hours credit. One hour each semester, by appointment. Stratton.

The profession of chemistry and chemical engineering is affording an increasing number of openings for men with a longer and more thorough training than is given in the four-year college or chemical engineering course. For this reason the department would call attention to the opportunities for graduate work in this institution leading to the degree of master of arts or master of science.

Without designating arbitrarily such a course, the department would suggest the following outline for the thirty hours of graduate work:

First: A minor, of not over ten hours, to be chosen from the fields of physics, geology, engineering, mathematics, or natural science.

Second: The major subject—chemistry, twenty hours. This requirement is to be satisfied by the election of a number of carefully selected graduate courses, a considerable portion of which should be classroom rather than laboratory work, and the completion of a thesis, requiring not over one-third of the student's time, which will demand the solution of some research problem along the line of pure or applied chemistry. This latter is an essential requirement for the degree, since experience of this nature is of special value for one going into practical scientific work.

ECONOMICS AND COMMERCE.

Professor: BOYNTON.*Assistant Professors:* DUFFUS, ISE, SMITH, CATELL,
FERGUSON.*Lecturer on Accounting:* J. D. M. CROCKETT, C. P. A.

100.—SEMINAR. Two to ten hours credit. Either semester, by appointment. This is a research course for mature students. Applicants for admission to the seminar must satisfy the instructors of their preparation and ability to undertake original investigation. Each student must pursue a definite line of work under the personal direction of one of the instructors.

150.—MONEY. Three hours credit. First semester, at 10.
Boynton.

151.—BANKING. Three hours credit. Second semester, at 10.
Boynton.

152.—BANKING PRACTICE. Two hours credit. First semester, at 10.
Boynton.

153.—INVESTMENTS. Two hours credit. Second semester, at 10.
Boynton.

154.—BUSINESS ORGANIZATION AND MANAGEMENT. Three hours credit.
Boynton.

155.—HISTORY AND ORGANIZATION OF TRANSPORTATION. Two hours credit. First semester, at 11.
Boynton.

156.—RAILWAY RATES AND REGULATION. Two hours credit. Second semester at 11.
Boynton.

157.—CORPORATIONS AND TRUSTS. Three hours credit. Second semester, at 9.
Ferguson.

159.—PUBLIC UTILITIES. Two hours credit. Second semester at 9.
Duffus.

160.—INSURANCE. Three hours credit. Second semester, at 8.
Smith.

161.—PUBLIC FINANCE I. Three hours credit. First semester at 8.
Smith.

162.—PUBLIC FINANCE II. Three hours credit. Second semester at 8.
Smith.

164.—ACCOUNTING I. Three hours credit. First semester, at 2.
Catell.

165.—ACCOUNTING II. Three hours credit. Second semester at 2.
Catell.

166.—COST ACCOUNTING. Two hours credit. First semester, at 2.
Catell.

167.—ADVANCED ACCOUNTING AND AUDITING. Two hours credit. Second semester, at 2.
Catell.

168.—STATISTICS. Three hours credit. Second semester at 9.
Catell.

169.—BUSINESS LAW. Three hours credit. Second semester at 11.
Ferguson.

170.—LABOR PROBLEMS. Two hours credit. First semester at 8.
Ferguson.

171.—LABOR LEGISLATION. Two hours credit. Second semester at 8.
Ferguson.

172.—IMMIGRATION PROBLEMS. Two hours credit. Second semester at 10.

- 173.—MODERN ECONOMIC REFORM. Three hours credit. Second semester at 10. Boynton.
- 180.—ECONOMICS OF AGRICULTURE. Three hours credit. Second semester at 1. Ise.
- 181.—MARKETS AND MARKETING. Three hours credit. First semester, at 11. Duffus.
- 190.—ELEMENTS OF ECONOMICS. Three hours credit. First semester, at 1. (Not open to students who major in economics.) Ise.
- 191.—HISTORY OF ECONOMIC THOUGHT. Two hours credit. First semester at 9. Ise.
- 192.—THE DISTRIBUTION OF WEALTH. Three hours credit. Second semester at 9. Ise.

EDUCATION.

Professors: KELLY, OLIN, JOHNSON, SCHWEGLER,
KENT.
Associate Professors: NUTT, CARTER.
Assistant Professor: EIKENBERRY.

- 100.—SEMINAR IN EDUCATIONAL PSYCHOLOGY. Two hours credit. Both semesters, by appointment. Carter.
- 101.—SEMINAR IN MENTAL DEFECTS. Two hours credit. Both semesters, by appointment. Schwegler.
- 102.—SEMINAR IN EDUCATIONAL SYSTEMS OF HERBART AND FROEBEL. Two hours credit. First semester, by appointment. Olin.
- 103.—SEMINAR IN ORIGIN AND EARLY DEVELOPMENT OF UNIVERSITIES. Two hours credit. Second semester, by appointment. Olin.
- 104.—SEMINAR IN EDUCATIONAL ADMINISTRATION. Two hours credit. Both semesters, by appointment. Kelly.
- 150.—HISTORY OF ANCIENT AND MEDÆVAL EDUCATION. Two and one-half hours credit. First semester, first half, daily, at 3; second half, daily at 8. Olin.
- 151.—HISTORY OF MODERN EDUCATION. Two and one-half hours credit. First semester, first half, daily, at 2; second semester, first half, daily, at 8; second half, daily, at 3. Olin.
- 153.—SOCIAL EDUCATION. Two and one-half hours credit. Second semester, second half, daily, at 2. Carter.
- 154.—EDUCATIONAL CLINIC. Two and one-half hours credit. Second semester, first half, daily, by appointment. Schwegler.
- 155.—MENTAL MEASUREMENT OF SCHOOL CHILDREN. Two and one-half hours credit. First semester, second half, daily, at 9. Schwegler.
- 156.—VOCATIONAL EDUCATION AND GUIDANCE. Two and one-half hours credit. First semester, second half, daily, at 2. Johnson.
- 157.—SCHOOL HYGIENE. Two and one-half hours credit. Second semester, first half, daily, at 3. Nutt.
- 159.—EDUCATIONAL CLASSICS I. Two and one-half hours credit. First semester, second half, daily, at 3. Olin.
- 160.—EDUCATIONAL CLASSICS II. Two and one-half hours credit. Second semester, second half, daily, at 2. Olin.
- 161.—HIGH SCHOOL ADMINISTRATION. Two and one-half hours credit. First semester, first half, daily, 10 and 3; second semester, first half, daily, at 2; second half, daily, at 10. Johnson.
- 163.—EDUCATION IN AMERICA. Two and one-half hours credit. Second semester, first half, daily, at 9. Olin.
- 164.—EDUCATIONAL PSYCHOLOGY. Two and one-half hours credit. Second semester, first half, daily, at 3. Carter.

- 166.—EDUCATIONAL STATISTICS. Two and one-half hours credit. First semester, first half, daily, at 11. Kelly.
- 167.—ADVANCED EDUCATIONAL PSYCHOLOGY. Two and one-half hours credit. First semester, second half, daily, at 1. Carter.
- 168.—PRINCIPLES OF EDUCATION. Two and one-half hours credit. Second semester, second half, daily, at 9. Schwegler.
- 169.—TECHNIQUE OF TEACHING. Two and one-half hours credit. First semester, second half, daily, at 3. Nutt.
- 170.—SCHOOL SURVEYS. Two and one-half hours credit. First semester, first half, daily, at 8. Kent.
- 171.—THE ABNORMAL CHILD. Two and one-half hours credit. First semester, first half, daily, at 9. Schwegler.
- 172.—SUPERVISION OF INSTRUCTION. Two and one-half hours credit. First semester, second half, daily, at 11. Kent.
- 173.—CITY SCHOOL ADMINISTRATION. Two and one-half hours credit. Second semester, second half, daily, at 11. Kent.
- 174.—EDUCATIONAL ORGANIZATION AND ADMINISTRATION. Two and one-half hours credit. Second semester, first half, daily, at 11. Kelly.
- 175.—PSYCHOLOGY OF HIGH SCHOOL SUBJECTS. Two and one-half hours credit. First semester, first half, daily, at 8 and 1; second half, daily, at 3; second semester, second half, daily, at 8. Carter.
- 177.—PRACTICAL PROBLEMS OF PUBLIC SCHOOL EDUCATION. Two and one-half hours credit. Both semesters, by appointment.
- 178.—ADOLESCENCE. Two and one-half hours credit. First semester, second half, daily, at 10; second semester, first half, daily, at 10. Schwegler.
- 179.—MORAL EDUCATION. Two and one-half hours credit. Second semester, second half, daily, at 10. Schwegler.

Teachers' Courses.

Graduate credit is not given for senior teaching.

- 180.—TEACHERS' COURSE IN PHYSICS. Three hours credit. Second semester, by appointment. Stimpson.
- 181.—TEACHERS' COURSE IN BIOLOGICAL SCIENCES. Three hours credit. Both semesters, at 11. Eikenberry.
- 182.—TEACHERS' COURSE IN PHYSICAL GEOGRAPHY. Two hours credit. Second semester, at 9. Haworth.
- 183.—TEACHERS' COURSE IN HOME ECONOMICS. Three hours credit. First semester, at 9. Sprague.
- 184.—TEACHERS' COURSE IN NORMAL TRAINING. Two and one-half hours credit. First semester, first half, daily, at 3.
- 185.—TEACHERS' COURSE IN GERMAN. Three hours credit. Second semester, at 9. Engel.
- 186.—TEACHERS' COURSE IN ENGLISH. Three hours credit. First semester, at 2. Hopkins.
- 187.—TEACHERS' COURSE IN LATIN. Three hours credit. First semester, at 2. Walker.
- 188.—TEACHERS' COURSE IN ROMANCE LANGUAGES. Three hours credit. First semester, by appointment. Neuen Schwander.
- 189.—TEACHERS' COURSE IN MATHEMATICS. Three hours credit. Second semester, at 11. Mitchell.
- 191.—TEACHERS' COURSE IN HISTORY. Three hours credit. First semester, at 2. Melvin.

ENGINEERING MECHANICS.*Professor: RICE (H. A.).**Assistant Professor: JONES (J. O.).*

154.—ENGINEERING MATERIALS. Five hours credit. First semester, by appointment. Rice.

155.—HYDRAULICS. Three hours credit. Either semester. J. O. Jones.

158.—HYDRAULIC POWER. Three hours credit. First semester, by appointment. J. O. Jones.

ENGINEERING—Civil.*Professors: RICE (H. A.), WILLIAMS (C. C.).**Assistant Professor: WELKER.*

100.—STRUCTURAL DESIGNING. Five hours credit. First or second semester, by appointment. An advanced course covering cantilever, swing and suspension bridges, skeleton frames for buildings, train-shed roofs, standpipes, and elevated tanks. This course is designed to follow course 162. Lectures, recitations, and detail designing in the drawing room. Rice.

101.—RESEARCH COURSE. A course of investigation of some matter directly related to civil engineering. This course should run through the year, making ten hours' credit. Arrangements for the course should be made with Professor Rice.

159.—MAINTENANCE OF WAY. Three hours credit. Second semester, Williams.

160.—RAILWAY TERMINAL STRUCTURES. Five hours credit. Second semester. An extended study of the design of retaining walls, water tanks, coal bunkers and coaling stations, ore bins, grain bins and elevators, turntables, transfer tables, train sheds, ash pits, chimneys, and other accessory structures. Williams.

162.—BRIDGE DESIGNING. Four hours credit. Second semester. Rice.

165.—REINFORCED CONCRETE. Three hours or five hours credit. First or second semester. Rice.

168.—PAVEMENTS. Three hours credit. Second semester. Lectures and laboratory. A study of road-building rocks, bituminous materials, brick and brick clays, wood blocks, fillers, and the economical selection of type of pavement. Williams.

169.—FOUNDATIONS. Three hours credit. Second semester. A study in the design and construction of ordinary and subaqueous foundations. Williams.

172.—SANITARY ENGINEERING. Five hours credit. Second semester, by appointment. Public sanitation, particularly with reference to the water-borne infectious diseases. Influence of good sewerage, drainage and water supply upon the health of communities. Visits to sanitary engineering works. State control of public water supplies and pollution of streams. Prerequisites, courses in water supply and sewerage. Lectures, recitations, and reading. Welker.

ENGINEERING—Mechanical.*Professor: SIBLEY.**Associate Professor: SLUSS.*

100.—ADVANCED ENGINEERING LABORATORY. Five hours credit. Both semesters, by appointment. Research work in some line connected with power development, fuels, lubrication or refrigeration, as may be selected in consultation with the instructor. Sluss.

101.—ADVANCED DESIGNING. Five hours credit. Both semesters, by appointment. The course calls for a complete design in all details of some machine or of a plant for manufacturing or power development purposes. Steam and gas machinery and systems of power transmission are given particular attention. Sibley.

102.—RESEARCH COURSE. Five hours credit. Each semester, by appointment. A full presentation of some engineering subject to be selected in consultation with the instructor in charge. It may be a subject which is being treated in course 100 or 101. Sibley, Sluss.

103.—ADVANCED THERMODYNAMICS. Three hours credit. First semester, by appointment. An advanced course based on the mathematical theory of heat interchanges. Open to those who have taken the undergraduate course in the School of Engineering, or its equivalent. Sibley.

ENGINEERING.

Professor: SHAAD.

Assistant Professor: GARVER.

151.—MANUFACTURING. Two hours credit. First semester.

Garver.

152.—INDUSTRIAL ADMINISTRATION. Three hours credit. Second semester. Shaad.

ENGINEERING—Electrical.

Professor: SHAAD.

Assistant Professor: JOHNSON (F. E.).

100.—POWER TRANSMISSION AND ELECTRIC RAILWAYS. Four hours credit. Second semester, by appointment. An advanced course in these subjects, consisting of lectures, assigned readings, and problems, special attention being paid to the engineering features of long-distance power transmission and the electrification of trunk-line railways. Shaad.

157.—ELECTRIC LIGHTING. Three hours credit. Second semester.

Johnson.

158.—ELECTRIC POWER TRANSMISSION. Five hours credit. Second semester. Shaad.

162.—CENTRAL STATIONS. Three hours credit. Second semester.

Shaad.

163.—ADVANCED ELECTRICAL LABORATORY. Five hours credit. Second semester. Johnson.

ENGINEERING—Mining.

Assistant Professor: GRIDER.

163.—MINE PLANT AND MILL DESIGN. Three hours credit. Second semester. Grider.

164.—MINING ENGINEERING. Three hours credit. Either semester.

Grider.

166.—ADVANCED ORE DRESSING. Four hours credit. Second semester.

Grider.

167.—MINERAL LAND SURVEYING. Three hours credit. First semester. Grider.

ENGLISH LANGUAGE AND LITERATURE.

Professors: DUNLAP, HOPKINS, O'LEARY.

Associate Professors: WHITCOMB, SISSON, JOHNSON, LYNN.

Assistant Professors: GARDNER, BURNHAM.

REQUIREMENTS FOR MASTER'S DEGREE: (1) A schedule for the entire course for the master's degree must be approved by the department before work begins. (2) Three hours credit in Old English is required. (3) Fifteen of the total of thirty hours credit must be in strictly graduate English courses or investigation. (4) Work on the thesis must credit from six to ten hours.

103.—INTRODUCTION TO COMPARATIVE LITERATURE. Three hours credit. Second semester, at 8. Lectures on the general materials, methods, and purposes of Comparative Literature. Individual work according to the preparation and needs of the student. Whitcomb.

106.—ENGLISH PROSE OF THE EIGHTEENTH CENTURY. Three hours credit. First semester, at 9. The authors studied will be Swift, Addison, Steele, Johnson, Goldsmith, and Burke. Lectures, library work, and the preparation of a thesis. O'Leary.

107.—HISTORY OF ENGLISH CRITICISM. Two hours credit. Second semester. This course will be devoted to the general development of English criticism, or to some specialized field, according to the preparation and needs of the class. Whitcomb.

108.—LATER NINETEENTH CENTURY VERSE. Three hours credit. Second semester, twice a week. Special study of the poetry of Arnold, Fitzgerald, Clough, Swinburne, the Rossettis, and William Morris. A brief survey of the minor poets of the period and of contemporary verse. Johnson.

109.—HISTORY OF THE LITERATURE AND THE TEACHING OF RHETORIC IN ENGLISH. Two hours credit. First semester, at 10. Lectures, library reading, and the preparation of a thesis. O'Leary.

110.—ENGLISH PROSODY. Two hours credit. Second semester. The history of English verse and verse forms. Whitcomb.

111.—EPIC POETRY. Three hours credit. First semester. Study of the form and subject matter of the epic, and of the general place of epic poetry in the history of English literature. Whitcomb.

114.—HISTORY OF THE ENGLISH LANGUAGE. Three hours credit. Second semester. After a study of the general principles of linguistic change and some study of Old English as a Germanic dialect, the development of the sounds, inflections, and syntax of English will be traced from old to modern times. Elementary Old English and a reading knowledge of German are prerequisite. Burnham.

115.—THE DEVELOPMENT OF ENGLISH PROSE. Two hours credit. First semester, Tuesday and Thursday, at 11. A study of the important prose between 1350 and 1660, with a survey of the development of prose style. Sisson.

116 and 117.—SEMINAR IN ENGLISH LITERATURE. Three to five hours credit. Both semesters. Individual research. In this course a properly qualified student may investigate an approved subject, under the guidance of an instructor. Designed in part for students preparing theses for the master's degree.

150.—NARRATION AND DESCRIPTION. Three hours credit. First semester, at 8, 9 and 10. O'Leary, Lynn, Morgan.

151.—NARRATION AND DESCRIPTION. Two hours credit. Second semester, at 8, 9 and 10. O'Leary, Lynn.

152.—EXPOSITION. Two hours credit. First semester, at 9. Gardner.

- 153.—ADVANCED ARGUMENT. Three hours credit. Second semester, at 2. Hopkins.
- 155.—LITERARY CRITICISM. Two hours credit. First semester, at 1. Hopkins.
- 156.—VERSIFICATION. One hour credit. First semester, Monday, at 4. Hopkins.
- 157.—ESSAY WRITING. Two hours credit. Second semester, at 10. O'Leary.
- 158.—PROSE INVENTION. Two hours credit. Second semester, at 1. Hopkins.
- 160.—ELEMENTARY OLD ENGLISH. (Anglo-Saxon.) Three hours credit. Both semesters, at 3. Burnham.
- 161.—BEOWULF. Two hours credit. Second semester, at 3. Burnham.
- 162.—MIDDLE ENGLISH. Two hours credit. First semester, at 2. Burham.
- 163.—MIDDLE ENGLISH. Three hours credit. Second semester, at 1. Burnham.
- 168.—MODERN ENGLISH GRAMMAR. Two hours credit. First semester, at 1. Burnham.
- 171.—AMERICAN LITERATURE. Three hours credit. First semester, at 1. Hopkins.
- 172.—AMERICAN LITERATURE. Three hours credit. Second semester, at 1. Hopkins.
- 173.—ENGLISH LITERATURE OF THE EIGHTEENTH CENTURY. Two hours credit. First semester, at 9. O'Leary.
- 174.—ENGLISH LITERATURE OF THE EIGHTEENTH CENTURY. Three hours credit. Second semester, at 9. O'Leary.
- 175.—VICTORIAN LITERATURE, exclusive of the novel and Tennyson and Browning. Two hours credit. First semester, at 10. Dunlap.
- 176.—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Three hours credit. First semester, at 11. Dunlap.
- 177.—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Three hours credit. Second semester, at 9. Dunlap.
- 178.—SHAKSPERE. Three hours credit. Both semesters, at 10. Dunlap.
- 179.—CHAUCER. Three hours credit. First semester, at 9. Dunlap.
- 180.—SHELLEY AND KEATS. Two hours credit. Second semester, at 11. Dunlap.
- 181.—BROWNING AND TENNYSON. Two hours credit. Second semester, at 8. Lynn.
- 182.—CARLYLE AND EMERSON. Two hours credit. Second semester, at 9. Johnson.
- 183.—MILTON AND HIS CONTEMPORARIES. Two hours credit. Second semester, at 9. Johnson.
- 184.—THE MODERN ENGLISH LYRIC. Two hours credit. First semester, at 3. Whitcomb.
- 185.—TECHNIC AND THEORY OF THE DRAMA. Two hours credit. First semester, at 2. Whitcomb.
- 186.—HISTORY OF THE ENGLISH DRAMA. Three hours credit. First semester, at 8. Johnson.

- 187.—HISTORY OF THE ENGLISH DRAMA. Three hours credit. Second semester, at 2. Whitcomb.
- 188.—THE ENGLISH NOVEL. Three hours credit. Second semester, at 11. Dunlap.
- 189.—THE ENGLISH ESSAY. Two hours credit. Second semester, at 9. O'Leary.

ENTOMOLOGY.

Professor: HUNTER.

Associate Professor: HUNGERFORD.

- 100.—ORIGINAL INVESTIGATION. Five hours credit. Throughout the year, by appointment. Experimental work in parthenogenesis. Fee, \$1. Hunter.
- 101.—FIELD ENTOMOLOGY, BIOLOGICAL SURVEY. Five hours credit. Throughout the year, including the Summer Session. The department is engaged in a survey of insect life in the state. This work will be resumed at the opening of the Summer Session. The course consists of a taxonomic and biologic study of all existing forms, investigations in their life histories, and relations to environments. Appointments on this survey are made through consultation with the department. Hunter.
- 102.—MORPHOLOGICAL DEVELOPMENT. Five hours credit. Throughout the year. Problems assigned with reference to the attainments of individual students. Fee, \$1.50. Hunter.
- 103.—ORCHARD LIFE AND FOREST LIFE. Five hours credit. Throughout the year. The State Entomological Commission is conducting a comprehensive and detailed survey of the insect life as it pertains to the orchards and forestry of the state. In this work special attention is given to statistical methods and detailed illustrations of distribution by means of maps and charts. A limited number of well-prepared students may receive appointments for credit on this work. Hunter.
- 104.—CONFERENCE. One hour credit. Throughout the year, by appointment. This course affords an opportunity for the presentation and discussion of current research in this branch of science. During the present year the subject for consideration is the influence of chemical and climatic stimuli upon developing forms. Hunter.
- 105.—ADVANCED TAXONOMY OF INSECTS. Five hours credit. Throughout the year, by appointment. Fee, \$1. Hunter.
- 151.—MORPHOLOGY OF INSECTS. Three hours credit. First semester, 10 to 12. Fee, \$1.50.
- 152.—SYSTEMATIC ENTOMOLOGY I. Two hours credit. First or second semester, 1 to 3. Fee, \$1. Hungerford.
- 153.—BIOLOGY OF THE ARTHROPODS. Two hours credit. Second semester, 10 to 12; first semester, 3 to 5. Fee, \$1. Hungerford.
- 154.—ADVANCED MORPHOLOGY OF INSECTS. Three hours credit. Throughout the year, by appointment. Fee, \$1.50. Hunter.
- 155.—TAXONOMY OF INSECTS. Three hours credit. First or second semester, by appointment. Fee, \$1. Hungerford.
- 156.—APPLIED ENTOMOLOGY. Two hours credit. First semester, 11 to 12. Fee, \$1. Hungerford.
- 157.—APPLIED ENTOMOLOGY II. Two hours credit. Second semester, 8 to 9. Hungerford.
- 158.—INSECTS AND PUBLIC HEALTH. Two hours credit. First semester, 10 to 11. Hunter.
- 159.—TEACHERS' COURSE. Three hours credit. Second semester, by appointment. Hungerford.
- 160.—AGRICULTURE. Two hours credit. First semester, 8 to 9. Hungerford. (Fall, 1916, Shull.)

161.—**APICULTURE.** A research course dealing with the comparative anatomical studies in the various strains of bees and individual colonies of each strain. During the period of the war, graduate students also will investigate the various processes dealing with honey production. For this purpose, there has been associated with the department a model apiary and laboratory in charge of a competent apiarist. Hunter.

FINE ARTS.

Professors: BUTLER, SKILTON, PREYER, DOWNING,
GRIFFITH, HEKKING.

PIANO. Five hours credit. Each semester, by appointment. Etudes of Phillipp, Liszt, MacDowell and others; transcriptions of Bach's organ fugues by Liszt, Tausig, Busoni; modern concert pieces and concertos. Open only to graduates of the artists' course or of other schools requiring a corresponding amount of work. Applicants for admission must play before the Fine Arts Faculty not less than three concert numbers, including a movement of a sonata or concerto, and give a public recital on completion of the course. Preyer.

ORGAN. Five hours credit. Each semester, by appointment. Greater preludes and fugues and chorale preludes of Bach, of modern German, French, English, and American masters. Oratorio accompaniment and playing with orchestra. This course is subject to the same conditions as Piano. Skilton.

OPERA AND ORATORIO. Five hours credit. By appointment. Practical and critical study of the development of opera and oratorio, the practical work consisting of one hour a week of vocal study of selected numbers; the theoretical work of two hours' critical examination of complete works. Open only to graduates of the voice department or of other schools requiring a corresponding amount of work. Applicants for admission must sing before the Music Faculty not less than three concert numbers, including an aria, and give a public recital on completion of the course. Butler, Downing, Skilton.

COMPOSITION. Five hours credit. By appointment. Original composition in large forms, suite sonata, overture, cantata, concerto. Open to graduates of the music department or of other schools requiring a corresponding amount of work. Applicants must present original compositions in the smaller forms which show evidence of talent and mastery of material. Preyer, Skilton.

DESIGN. Five hours credit. Each semester. Advanced designing, calling for the completion of an original painting containing not less than three figures. Shortest dimensions of the canvas to be not less than three feet. Open to graduates of the School of Fine Arts or of other schools of equal standing. Griffith, Hekking.

GEOLOGY AND MINERALOGY.

Professor: HAWORTH.
Assistant Professors: TODD, MOORE, HAYNES.

A graduate student who has completed a fairly good course in geology and mineralogy, and a term or two in surveying, metallurgy, and ore dressing, is well prepared to begin on the following graduate courses:

100.—**GEOLOGIC METHODS, SECTIONS, PLANE-TABLE WORK, ETC.** Five hours credit. First semester, at 1. Early in his graduate course the student should become familiar with methods of investigation and reporting followed by the leading geologists of the world, partly in order to prepare himself to conduct original investigations, and also to be able to understand and appreciate the voluminous reports of original investi-

gations with which he will be brought in contact. Prerequisites, undergraduate geology 2 or 2a and 2b, 50, 71, 72, 73, or their equivalents.

Haworth, Haynes.

101.—GEOLOGIC METHODS, SECTIONS, ETC. Five hours' credit. Second semester, at 1. A continuation of 100.

Haworth, Haynes.

102.—GEOLOGY OF NON-METALS, PRINCIPALLY COALS. Five hours credit. First semester, at 2. The object of this course is to study in detail the coal fields of the world, including their geology, geography and commerce, and approved methods of field investigation. Prerequisites, undergraduate geology 2 or 2a and 2b, 50, 71, 72, 73, or their equivalents.

Haworth, Haynes.

103.—GEOLOGY OF NON-METALS, PRINCIPALLY OIL AND GAS. Five hours credit. Second semester, at 1. The industrial world has so completely adapted itself to the uses of oil and gas that it would be calamitous for their production to fail. Consequently, it is important that the geologist be well informed on all phases of their geology, geography, commerce, and technology. Prerequisites, undergraduate geology 2 or 2a and 2b, 50, 71, 72, 73, or their equivalents.

Haworth, Haynes.

104.—GEOLOGY OF METALS, GENERAL PRINCIPLES OF ORE FORMATIONS, AND THE NOBLE METALS. Five hours credit. First semester, at 3:00. This course and course 105 are intended to constitute a year's study in the geology of metals. At the outset a thorough study of the origin of ore deposits will be made, in which the writings of the best authorities available will be used. It is presumed that this general study may be completed in time to make a somewhat detailed study of the noble metals by the end of the term. Prerequisites, undergraduate geology 2 or 2a and 2b, 50, 71, 72, 73.

Haworth, Haynes.

105.—GEOLOGY OF METALS. Five hours credit. Second semester, at 3. A continuation of 104. Prerequisites as for 104.

Haworth, Haynes.

106.—HISTORY, GEOLOGY, AND COMMERCE OF MINING. Five hours credit. Second semester, at 2:00. It is considered well worth while to devote one semester to a study of general mining, in which will be traced the centuries of mining history, in order that the practical man may have the assistance of all past experience to aid him in his profession. Prerequisites, a sufficiently extended study to assure an appreciation of the subject.

107.—EXPERT EXAMINATION OF PROPERTIES. Five hours credit. Second semester, by appointment. This course is given expressly to prepare the student for making expert examinations of properties covering all classes of mines, and producing a report on same prepared in the most approved manner. It will require much reading and consideration of various well-known mining properties, and a specific examination and report upon some particular property. Prerequisites, substantially all the preceding courses herein listed.

108.—DISSERTATION. Eight hours credit. Either semester. These two courses are a culmination of an extended graduate course in geology, and lead to a degree of doctor of philosophy. By the close of the preceding year the subject should be chosen, and at least a part of the field work should be done during the summer vacation. A specific area will be chosen for this purpose, and the student will be expected to make a complete survey and prepare a correct and elaborate report.

109.—ADVANCED INVERTEBRATE PALEONTOLOGY. Three or five hours credit. First semester. This course is an amplification of course 57 in the College. The entire collection of fossil invertebrates is placed in the student's hands for study. Emphasis is laid on the examination of original papers; and, as many of these are in German and French, the ability to read these languages is essential.

Moore.

110.—ADVANCED STRATIGRAPHY. Three or five hours credit. Second semester. In this course a detailed study is made of the earth's stratigraphy as revealed by paleontology. Original papers are studied and the formations and deposits of different regions are compared. Moore.

111.—SUMMER FIELD WORK. Opportunity is offered advanced students in geology, either graduate or undergraduate, to do field work in geology in connection with the University Geological Survey of Kansas, under the guidance of the department of geology, for which credit will be given the same as for work done in the classroom and laboratory. By appointment. Haworth, Todd, Moore, Haynes.

150.—PHYSIOGRAPHY.

162, 163.—INVERTEBRATE PALEONTOLOGY.

171, 172.—ECONOMIC GEOLOGY.

173.—STRUCTURAL AND DYNAMIC GEOLOGY.

180.—SYSTEMATIC MINERALOGY.

183.—ADVANCED AND ORIGINAL WORK IN MINERALOGY. Three, five or ten hours credit. Both semesters, by appointment. This course may be chosen by graduate students who have completed courses 2 (or 2a) and 2b, 31, 50 in the College and who wish to specialize in the subject of mineralogy. Haynes.

184.—PETROGRAPHY.

185.—ADVANCED AND ORIGINAL WORK IN PETROGRAPHY. Three, five or ten hours credit. Both semesters, by appointment. This course may be chosen by graduate students who have completed courses 2 (or 2a) and 2b, 31, 50, 81, 82 in the College, and who wish to specialize in the subject of petrography. Haynes.

GERMANIC LANGUAGES AND LITERATURES.

Professors: ENGEL, THURNAU.

Associate Professors: CORBIN,* KRUSE.

Assistant Professors: STURTEVANT, BRIGGS.

Instructor: APPELBOOM.†

100.—HISTORY OF THE GERMAN LANGUAGE. Two hours credit. Second semester, by appointment. Introduction to philological study. Wright's History of the German Languages, vol. I, and supplementary reading. Lectures and library work. Briggs.

101.—GOTHIC. Two hours credit, first semester, and two hours, second semester, by appointment. First semester, lectures on phonology and morphology; Braune's Gotische Grammatik. Second semester, a study of the Gothic Bible; Streitberg's Gotische Bibel. Sturtevant.

102.—OLD NORSE. Two hours credit, first semester, and two hours, second semester, by appointment. First semester, lectures on Old Norse literature; selected readings from the Sagas and the Prose Edda, Noreen's Altisländische Grammatik, Holthausen's Altisländisches Lesebuch. Second semester, lectures on Old Norse poetry; Hildebrand's Die Lieder der Aelteren Edda. Sturtevant.

103.—GERMANIC MYTHOLOGY. Two hours credit. First semester, at 9. Kruse.

104.—OLD HIGH GERMAN. Two hours credit. First semester, by appointment. Lectures on the phonology of high German. Braune's Althochdeutsche Grammatik and Althochdeutsches Lesebuch. Sturtevant.

105.—OLD SAXON. Two hours credit. Second semester, by appointment. Holthausen's Altsächsisches Elementarbuch, Behagel's Heliand. Sturtevant.

* Absent on leave.

† On leave for war work, 1917-1918.

106.—MIDDLE HIGH GERMAN. Two hours credit, first semester, and two hours, second semester, by appointment. Paul's *Mittelhochdeutsche Grammatik*; Hartmann, *Der Arme Heinrich*; *Nibelungenlied*. Selections from Walther von der Vogelweide. Engel.

107.—SEMINAR IN GERMAN LITERATURE. Two hours credit, first semester, and two hours, second semester, by appointment. The subject for study in 1918-19 will be Schiller or Goethe. Thurnau.

108.—THE ROMANTIC SCHOOL. Two hours credit, first semester, and two hours, second semester, by appointment. Early Romantic school, first semester, and later Romantic school, second semester. Lectures on the Romantic movement, library reading, and reports. Corbin.

109.—SPECIAL STUDIES IN HEBBEL. Two hours credit. Second semester, by appointment. Kruse.

152.—HISTORY OF GERMAN PROSE FICTION. Three hours credit. Second semester. Thurnau.

153.—THE LYRICS OF GOETHE. Two hours credit. First semester. Corbin.

154.—THE REALISTIC DRAMA. Three hours credit. First semester. Kruse.

155.—THE NATURALISTIC DRAMA. Two hours credit. Second semester. Kruse.

156.—THE ROMANTIC DRAMA. Two hours credit. Second semester. Kruse.

157.—STORM AND STRESS. Three hours credit. Second semester. Engel.

158.—MODERN SWEDISH I. Three hours credit. First semester, by appointment. Sturtevant.

159.—MODERN SWEDISH II. Three hours credit. Second semester, by appointment. Sturtevant.

160.—MODERN NORWEGIAN I. Three hours credit. First semester, by appointment. Sturtevant.

161.—MODERN NORWEGIAN II. Three hours credit. Second semester, by appointment. Sturtevant.

162.—MODERN DUTCH I. Three hours credit. First semester, by appointment. Appelboom.

163.—MODERN DUTCH II. Three hours credit. Second semester, by appointment. Appelboom.

164.—TEACHERS' COURSE. Three hours credit. First semester, at 9. Review of special topics in grammar and syntax, with composition and practical illustrative exercises based on Thomas' *German Grammar*, some study and drill in elementary practical phonetics, and a comparison and discussion of different methods in teaching beginning German. Intended especially for those who expect to teach German in high schools. Open only to the best students of the department. (See *School of Education*.) Engel.

GREEK.

Professor: WILCOX.

Associate Professors: STERLING, BRANDT.

153.—HOMER'S ILIAD. Three hours credit. First semester. (Not given in 1918-'19.) Brandt.

154.—PLATO'S GORGIAS OR REPUBLIC. Three hours credit. Second semester. (Not given in 1918-'19.) Brandt.

155.—LYRIC POETRY. Two hours credit. First semester. (Not given in 1918-'19.) Brandt.

- 156.—GREEK COMEDY. Two hours credit. Second semester. (Not given in 1918-'19.) Brandt.
- 157.—HOMER'S ODYSSEY. Three hours credit. First semester. Brandt.
- 158.—ALEXANDRIAN LITERATURE. Three hours credit. Second semester. Brandt.
- 159.—THUCYDIDES. Two hours credit. First semester. Brandt.
- 160.—ARISTOTLE. Two hours credit. Second semester. Brandt.

The following courses may be taken as minors:

- 161.—THE GREEK IN ENGLISH. Three hours credit. First semester. Sterling.

COURSES WHICH REQUIRE NO KNOWLEDGE OF THE GREEK LANGUAGE.

- 165.—GREEK POETRY IN TRANSLATIONS. Three hours credit. First semester. Brandt.
- 166.—THE GREEK DRAMA IN TRANSLATIONS. Two hours credit. Second semester. Brandt.
- 168.—GREEK PROSE MASTERPIECES IN TRANSLATIONS. Three hours credit. Second semester. Sterling.
- 169.—GREEK ARCHITECTURE. Two hours credit. First semester. Brandt.
- 170.—GREEK SCULPTURE AND PAINTING. Three hours credit. Second semester. Brandt.

HISTORY.

Professors: HODDER, PATTERSON.
Associate Professors: CRAWFORD, DAVIS.
Assistant Professor: MELVIN.

EQUIPMENT. The University library has a considerable number of the basic sets requisite for historical research, such as Migne's *Patrologia*, the *Monumenta Germaniæ Historica*, the *Scriptores Rerum Italicarum*, the *Rolls Series*, the *Journals of the Lords and Commons*, the *Reports of the English Historical MSS. Commission*, and several series of the *Calendars of State Papers*. The general sets are supplemented by special collections in English legal history, the period of the French revolution and several fields of American history. The recent provision of separate quarters in the library for research students in history has improved the facilities for graduate work.

100 and 101.—SEMINAR IN EUROPEAN HISTORY. Three or five hours credit. First and second semesters, hours by appointment. A study of the sources in some restricted field and the preparation of papers based upon them. Designed to give practical experience in historical investigation. Melvin.

102 and 103.—SEMINAR IN AMERICAN HISTORY. Three or five hours credit. First and second semesters, hours by appointment. Practice work with source material. The subjects for investigation will be taken from the history of the trans-Missouri West. Hodder.

150.—GREEK HISTORY. Two hours credit. First semester. Patterson.

151.—ROMAN HISTORY. Two hours credit. Second semester.

Patterson.

153.—MEDIEVAL INSTITUTIONS. Two hours credit. First semester.

Patterson.

155.—PROTESTANT REVOLT. Two hours credit. Second semester.

Patterson.

158 and 159.—HISTORY OF THE COMMON LAW. Two hours credit. First and second semesters. Crawford.

160.—FOUNDATIONS OF MODERN EUROPE. Three hours credit. First semester. Melvin.

161.—HISTORY OF CONTEMPORARY EUROPE. Three hours credit. Second semester. Melvin.

162.—FRENCH REVOLUTION. Three hours credit. Second semester. Melvin.

163.—NAPOLEON. Two hours credit. Second semester. Melvin.

164.—DIPLOMACY OF THE WAR. Three hours credit. First semester. Davis.

165 and 166.—PROBLEMS OF MODERN EUROPEAN HISTORY. Two hours credit. First and second semesters. Melvin.

167.—AMERICAN COLONIAL HISTORY. Three hours credit. First semester. Hodder.

168.—THE REVOLUTION AND THE CONSTITUTION. Three hours credit. Second semester. Hodder.

169.—AMERICAN CONSTITUTIONAL LAW. Two hours credit. Second semester. Hodder.

170 and 171.—PRESIDENTIAL ADMINISTRATIONS. Five hours credit. First and second semesters. Hodder.

172.—LATIN AMERICA. Three hours credit. First semester. Davis.

HOME ECONOMICS.

Professor: SPRAGUE.*

Instructors: WOODRUFF, HAZEN.

100.—RESEARCH COURSE. Five or ten hours credit. Either semester, by appointment. This course should run through the year to gain ten hours credit. Original investigation of some unsolved problem relating to the home. Open to graduate students who have sufficient preparation. Fee, \$1 per hour. Sprague.

101.—SEMINAR. Three hours credit. Second semester, by appointment. Discussion of and reports on current literature relating to home economics. The full presentation of some subject will be required. Sprague.

151.—DIETETICS. Five hours credit. Second semester. Fee, \$2.50. Woodruff.

152.—SPECIAL PROBLEMS IN HOME ECONOMICS I. Three or five hours credit. First semester. Fee, \$1 per hour. Sprague.

153.—SPECIAL PROBLEMS IN HOME ECONOMICS II. Three or five hours credit. Second semester. Fee, \$1 per hour. A continuation of course 152. Sprague.

165.—PUBLIC ASPECTS OF THE HOUSEHOLD. Three hours credit. Both semesters. Hazen.

JOURNALISM.

Professor: FLINT.

Assistant Professor: LOUD.

100.—SEMINAR. Three to five hours credit. Either semester, by appointment. A research course for mature students having the necessary preparation and ability to undertake a definite line of original investigation under the direction of instructors.

151.—MAGAZINE WRITING. Three hours credit. First semester. Loud.

* On leave for war work, second semester.

- 152.—THE SHORT STORY. Three hours credit. Second semester. Loud.
- 153.—INTERPRETATION OF THE NEWS. Two hours credit. First semester. Loud.
- 154.—INTERPRETATION OF THE NEWS II. Two hours credit. Second semester. Loud.
- 155.—ADVERTISING I. Three hours credit. First semester. Flint.
- 156.—ADVERTISING II. Three hours credit. Second semester. Flint.
- 159.—EDITORIAL PROBLEMS AND POLICIES I. Three hours credit. First semester. Flint.
- 160.—EDITORIAL PROBLEMS AND POLICIES II. Three hours credit. Second semester. Flint.

LATIN LANGUAGE AND LITERATURE.

Professor: WALKER.

Associate Professors: OLIVER, MURRAY.

Assistant Professor: CRESSMAN.

- 100.—THE TOPOGRAPHY OF ROME. Two hours credit. Second semester, at 8. Lectures and reading. Illustration by the use of photographs and stereopticon. Each member of the class will present written reports on subjects investigated by himself. Oliver.
- 101.—INVESTIGATION IN ROMAN POLITICAL INSTITUTIONS. Two to five hours credit. First or second semester, by appointment. Given only after or in connection with course 159. This course will be conducted by additional lectures, and by additional investigations by members of the course. The master's thesis may be worked up in connection with this course. Murray.
- 102.—LATIN EPIGRAPHY. Three hours credit. Second semester, at 11. This course has as its object an acquaintance with the forms and subject matter of Latin inscriptions. Members will be assigned investigations of the contributions of epigraphy to political, constitutional, and economic history, and to other fields. Murray.
- 103.—INVESTIGATION IN LATIN EPIGRAPHY. Two to five hours credit. By appointment. Given only in connection with course 102. Additional investigation of special topics will be expected of members of the course. Murray.
- 104.—ELEMETARY SANSKRIT. Three hours credit. This course is designed especially for classical students, but may be taken with profit by advanced students of any language. It includes the elements of the language and the reading of easy texts. Special emphasis is given to phonetic and syntactic phenomena, which throw light on the grammar of Latin and Greek. (Not given in 1918-'19.) Cressman.
- 105.—COMPARATIVE GRAMMAR. Three hours credit. This course gives a description and history of the Latin sounds and inflections, supplemented by a comparison of Latin with the related languages, Greek, Sanskrit, and German, to illustrate linguistic principles existing in all Indo-European languages. (Not given in 1918-'19.) Cressman.
- 106.—SEMINAR IN SYNTAX. Three or five hours credit. First semester, at 9. Walker.
- 107.—SEMINAR (continued). Three or five hours credit. Second semester, at 11. A subject for the thesis required of all candidates for the degree of master of arts is expected to present itself in the course of the work, and in the second term a portion of the time may be devoted to the working up of that subject. Walker.
- 150.—ADVANCED LATIN COMPOSITION. Two hours credit. First semester, at 1. Walker.
- 151.—PLAUTUS. Two hours credit. First semester, at 1. Murray.

- 152.—VERGIL'S ECLOGUES AND GEORGICS. Second semester, at 10.
Walker.
- 153.—CATULLUS, TIBULLUS, AND PROPERTIUS. Two hours credit. (Not given in 1918-'19.)
- 154.—PLINY'S LETTERS. Two hours credit. (Not given in 1918-'19.)
- 155.—LUCRETIVS. Three hours credit. (Not given in 1918-'19.)
- 156.—THE ANNALS OF TACITUS. Three hours credit. Second semester, at 8.
Murray.
- 157.—JUVENAL. Three hours credit. (Not given in 1918-'19.)
- 158.—LITERATURE OF THE EMPIRE. Three hours credit. First semester, at 11.
Oliver.
- 159.—ROMAN POLITICAL INSTITUTIONS. Three hours credit. First semester, at 1.
Murray.
- 160.—CÆSAR'S GALLIC CAMPAIGNS. Three hours credit. Second semester, at 1.
- 161.—VERGIL. Three hours credit. (Not given in 1918-'19.)
- 187.—TEACHERS' COURSE IN LATIN. Three hours credit. First semester, at 2.
Walker.

LAW.

Professors: GREEN, BURDICK, HIGGINS,* HUMBLE.
Associate Professor: RICE.

- 100.—CONSTITUTIONAL LAW. Five hours credit. Daily, second semester, at 11:30. General principles governing constitutions; the United States and the states; establishment and amendment of constitutions; construction and interpretation; departmental powers; police power; eminent domain; taxation; civil rights; constitutional guaranties; laws impairing the obligation of contracts, retroactive laws.
Green.
- 101.—COMMON-LAW PLEADING. Two and one-half hours credit. Daily, first half of first semester, at 8:30. An analytical and historical study of the law of remedies at common law, including ancient modes of trial; special topics assigned, such as assumpsit, trover, trespass, for historical investigation of the development of the law of contracts and of torts.
Rice.
- 102.—JURISPRUDENCE. Two and one-half hours credit. Daily, first half of first semester, at 11:30. An analytical study of the elements of jurisprudence, viz.: the science of human relations regulated by positive law; the theories of the state, sovereignty and government; an historical examination of the systems of English and American common law and equity.
Humble.
- 103.—ROMAN LAW. One hour a week for twenty-seven weeks, first semester and first half of second semester, at 9:30. Development and extension of Roman law; its revival and present influence; the *corpus juris civilis*; the law of persons, of the family, of property, of servitude, of obligations, of delicts, of inheritance, of procedure, of criminal law, etc.
Burdick.

MATHEMATICS.

Professors: VAN DER VRIES,† ASHTON.
Associate Professors: MITCHELL, STOFFER.
Assistant Professor: LEFSCHETZ.

- 100.—THEORY OF FUNCTIONS OF A COMPLEX VARIABLE. Three hours credit. Throughout the year, by appointment. An introduction to the general theory of functions of a complex variable.
Ashton.

* Absent on leave, 1917-'18.

† Absent for war work, second semester.

101.—THEORY OF FUNCTIONS OF A REAL VARIABLE. Three hours credit. Throughout the year, by appointment. The theory of assemblages, limits, continuity, convergence, derivatives, integrals, etc. Mitchell.

102.—THEORY OF ELLIPTIC FUNCTIONS. Three hours credit, throughout the year. Ashton.

103.—RESEARCH AND THESIS. Three to ten hours credit. Either semester. Students who are carrying on investigations in mathematics will register in this course.

Van der Vries, Ashton, Mitchell, Stouffer, Lefschetz.

107.—HIGHER ALGEBRA. Three hours credit. Second semester, by appointment. Selected topics in Bocher's Introduction to Higher Algebra. Fundamental properties of polynomials; properties of determinants; theory of linear dependence; systems of linear equations; linear transformations; multiplication of matrices; bilinear forms; properties of polynomials in general. Mitchell.

108.—GALOIS'S THEORY OF EQUATIONS. Two hours credit. First semester, by appointment. The application of the method of groups to the study of algebraic equations. Ashton.

110.—THEORY OF CURVES AND SURFACES. Three hours credit. Throughout the year. Van der Vries.

111.—DIFFERENTIAL GEOMETRY. Two hours credit. Throughout the year, by appointment. Applications of the calculus to the theory of curves and surfaces. Mitchell.

113.—PROJECTIVE GEOMETRY. Three hours credit. Throughout the year, by appointment. The logical foundations of projective geometry; principle of duality; projective transformations in one-, two- and three-dimensional forms; conic sections; introduction of analytic methods on a synthetic basis. The general projective group and its important subgroups. Mitchell.

114.—FOURIER'S SERIES, AND THE POTENTIAL FUNCTION. Three hours credit. Throughout the year, by appointment. Development of functions in Fourier's series, with applications to the solution of problems in physics. Introduction to spherical harmonics. The potential function. Prerequisites, courses 50, 51, 55. Ashton and M. E. Rice.

115.—PROJECTIVE DIFFERENTIAL GEOMETRY. Three hours credit. Throughout the year, by appointment. Elements of Lie's theory; invariants and covariants of linear homogeneous differential equations; projective differential geometry of plane and space curves, ruled surfaces, and curves on ruled surfaces. Stouffer.

120.—CELESTIAL MECHANICS. Three hours credit. Throughout the year, by appointment. Rectilinear motion, central forces, attraction, and potential, the two-body problem, general integrals of the problem of n bodies, the three-body problem, perturbations. Moulton's Celestial mechanics, and collateral reading. Stouffer.

121.—THEORY OF NUMBERS. Three hours credit. Second semester, by appointment. Divisibility, congruences, primitive roots, quadratic residues, quadratic forms, laws of reciprocity of Legendre-Gauss.

Lefschetz.

150.—ANALYTICAL MECHANICS. Three hours credit. Second semester. Van der Vries.

151.—DIFFERENTIAL EQUATIONS. Three hours credit. First semester. Van der Vries.

152.—ADVANCED CALCULUS. Three hours credit. First semester. Ashton.

153.—ELLIPTIC INTEGRALS. Two hours credit. Second semester. Ashton.

- 154.—ELEMENTARY NUMBER THEORY. Two hours credit. Second semester. Lefschetz.
 155.—SERIES. Two hours credit. First semester. Mitchell.
 157.—COMPLEX NUMBERS. Three hours credit. Second semester. Ashton.
 159.—MODERN GEOMETRY I. Three hours credit. First semester. Stouffer.
 160.—MODERN GEOMETRY II. Three hours credit. Second semester. Stouffer.
 162.—HISTORY OF MATHEMATICS. Two hours credit. First semester. Mitchell.
 189.—TEACHERS' COURSE. Two hours credit. Second semester. Mitchell.

PHARMACEUTICAL AND BIOLOGICAL CHEMISTRY.

Professors: SAYRE, HAVENHILL, NELSON.

- 100.—PHYTOCHEMISTRY (PLANT CHEMISTRY). Five hours credit. First and second semesters. Original investigation and research work on the chemical constituents of plants, dealing especially with such constituents as exert a marked physiological action when introduced into the animal economy. Sayre.
 101.—RESEARCH IN BIOLOGICAL CHEMISTRY. Two or more hours credit. Throughout the year, by appointment. Sayre, Nelson.
 102.—BIOCHEMICAL SEMINAR. (For graduates only.) Weekly meetings. Prerequisites, a reading knowledge of French and German. Discussion and reports on current biochemical literature. Nelson.
 103.—ANALYSIS OF DRUGS AND DIETETICS. Two, three or five hours credit. Either semester. This is a companion course to food analysis (see chemistry 152D), and is arranged especially for students who desire to qualify as food and drug analysts. Sayre, Havenhill.
 104.—RESEARCH IN PHARMACEUTICAL CHEMISTRY. Two or more hours credit. Throughout the year, by appointment. Havenhill.
 150.—BIOLOGICAL CHEMISTRY. Four or six hours credit. Second semester. A survey of the field of biochemistry. Lectures, conferences, laboratory work. Nelson and assistants.
 153.—COLLOID CHEMISTRY. Two hours credit. First semester. A study of colloids and the colloidal state of matter. Special emphasis is laid on the application of colloid chemistry to problems in biochemistry. Open to Senior and graduate students. Nelson.

PHILOSOPHY AND PSYCHOLOGY.

Professors: HOLLANDS, TEMPLIN,* HUNTER.*
Associate Professor: DOCKERAY.*
Assistant Professor: MITCHELL.*
Instructor: FATERSON.*

- 100.—PHILOSOPHICAL SEMINAR. Five or ten hours credit. First semester, by appointment. Opportunity will be given graduate students to continue in a more exhaustive manner the study of any of the subjects offered in the College courses, and to engage in original investigation. The work will be arranged to suit the special needs of individual students and will be under the immediate supervision of some instructor in the department.
 101.—PHILOSOPHICAL SEMINAR. Five or ten hours credit. Second semester, by appointment. A continuation of the preceding course.

* On leave of absence, 1917-'18.

102.—PSYCHOLOGICAL SEMINAR. Three, five, or ten hours credit. First semester. Opportunity is given graduate students for the advanced study of special topics in psychology. The organization of the seminar will take different forms to meet the needs of its members. Individual study of theoretical questions will be provided for by individual appointment. Group study of theoretical questions will be conducted through weekly meetings.

103.—PSYCHOLOGICAL SEMINAR. Three, five, or ten hours credit. Second semester. A continuation of course 102.

The following courses are open to undergraduates also. (For description, see The College.)

150.—ATTENTION, LEARNING AND THOUGHT. Three hours credit. First semester. Hunter.

151.—ANIMAL BEHAVIOR. Three hours credit. Second semester. Hunter.

152.—ABNORMAL PSYCHOLOGY. Three hours credit. Second semester. Dockeray.

153.—CHILD PSYCHOLOGY. Two hours credit. First semester. Dockeray.

154.—INDIVIDUAL PSYCHOLOGY. Three hours credit. First semester. Paterson.

155.—SOCIAL PSYCHOLOGY. Three hours credit. Second semester. Hunter.

156.—INSTINCT AND EMOTION. Three hours credit. Second semester. (Not given in 1917-'18.) Hunter.

157.—PSYCHOLOGICAL ÆSTHETICS. Two hours credit. Second semester. Hunter.

167.—PRINCIPLES OF PSYCHOLOGY. Three hours credit. Second semester. Hunter.

168.—ADVANCED PSYCHOLOGY I. Two to five hours credit. First semester. Hunter, Dockeray, Paterson.

169.—ADVANCED PSYCHOLOGY II. Two to five hours credit. Second semester. Hunter, Dockeray, Paterson.

170.—HISTORY OF PHILOSOPHY I. Three hours credit. First semester. Hollands.

171.—HISTORY OF PHILOSOPHY II. Three hours credit. Second semester. Hollands.

172.—PHILOSOPHICAL CLASSICS I. Two hours credit. First semester. Mitchell.

173.—PHILOSOPHICAL CLASSICS II. Two hours credit. Second semester. Mitchell.

174.—THEORY OF KNOWLEDGE. Three hours credit. First semester. Hollands.

175.—METAPHYSICS. Three hours credit. Second semester. Hollands.

176.—PHILOSOPHY OF RELIGION. Two hours credit. First semester. Hollands.

177.—ADVANCED LOGIC. Three hours credit. Second semester. Mitchell.

180.—SYSTEMATIC ETHICS. Three hours credit. First semester.

181.—PRACTICAL ETHICS. Two hours credit. Second semester.

PHYSICS AND ASTRONOMY.

Professor: KESTER.*Associate Professor:* RICE (M. E.).*Assistant Professors:* STIMPSON, SMITH (T. T.), * ALTER.*

100.—GRADUATE LABORATORY. Two to five hours credit. Either semester, by appointment. Kester, Rice, and Smith.

101.—THEORETICAL MECHANICS. Three hours credit. Through first and second semesters, by appointment. Lectures, with a problem hour each week. Prerequisites, course 50 or its equivalent, and another course of the same grade. Offered in alternate years. (Not offered in 1918-'19.) Kester.

102.—THEORY OF HEAT AND THERMODYNAMICS. Two hours credit. Through first and second semesters, by appointment. Lectures and problems. A development of Gibbs's ideas of the thermodynamic potentials and of equilibrium in systems containing several components in various phases. Prerequisites, courses 50 and 51, or 52 and 53, or equivalents. Offered in alternate years. (Not offered in 1918-'19.) Kester.

103.—THEORY OF ELECTRICITY. Three hours credit. Through first and second semesters, by appointment. Lectures and problems. Prerequisites, course 52 or its equivalent, and another course of the same grade. Offered in alternate years. Kester.

104.—ADVANCED OPTICS. Two hours credit. Through first and second semesters, by appointment. Lectures and problems. A development of the electromagnetic theory of light, of the Abbe theory of optical instruments, etc. Prerequisites, course 51 or its equivalent, and another course of the same grade. Offered in alternate years. T. T. Smith.

Courses 101, 102, 103, and 104 together form a two-year cycle, developing the fundamental parts of physics in a rigorous and detailed manner. Other courses, covering more special (in some cases newer) topics, are listed below.

105.—ELECTRON THEORY. Two hours credit. Throughout the year, by appointment. Theory of electromagnetic mass and of conduction of electricity through metals. Prerequisites, physics 50 and 51, or 52 and 53, or equivalents. Offered in alternate years. (Not offered in 1918-'19.) Kester.

106.—OSCILLATORY ELECTRIC CURRENTS AND ELECTROMAGNETIC WAVES. Three hours credit. Second semester, by appointment. Lectures and problems, giving the principles which underlie wireless telegraphy and telephony. Prerequisites, course 52 or its equivalent, another course of same grade, and some differential equations. Offered in alternate years. M. E. Rice.

107.—RESEARCH AND THESIS. Three to ten hours credit. Either semester. Students who are carrying on original investigations (either experimental or theoretical) in physics will register in this course.

Kester, M. E. Rice, T. T. Smith.

114.—FOURIER'S SERIES AND THE POTENTIAL FUNCTION. Three hours credit. Throughout the year, by appointment. Development of functions in Fourier's series, with application to the solutions of problems in physics. Introduction to spherical harmonics. The potential function with applications to problems in electricity. Prerequisites, physics 50 or mathematics 50, mathematics 51 and 55, or equivalent. Offered in alternate years. (Not offered in 1918-'19.) M. E. Rice, Ashton.

150.—MECHANICS AND HEAT. Three hours credit. First semester. Kester.

It is recommended that this course be followed by Mathematics 150, Analytic Mechanics. Three hours.

* Absent on leave.

- 151.—LIGHT AND RADIANT ENERGY. Three hours credit. Second semester. Offered in alternate years. (Not offered in 1918-'19.)
T. T. Smith.
- 152.—ELECTRICITY. Three hours credit. First semester.
M. E. Rice.
- 153.—CONDUCTION OF ELECTRICITY THROUGH GASES. Three hours credit. Second semester. Offered in alternate years.
Kester.
- 155.—PHYSICS LABORATORY. Light and radiant energy. Two to five hours credit. Second semester. By appointment.
T. T. Smith.
- 156.—PHYSICS LABORATORY. Electricity. Two to five hours credit. Either semester by appointment.
M. E. Rice.
- 157.—PHYSICS LABORATORY. Gas conduction and radioactivity. Two to five hours credit. Second semester. By appointment. Offered in alternate years.
Kester.
- 158.—TEMPERATURE CONTROL AND MEASUREMENT. Three hours credit. Second semester. Offered in alternate years. (Not offered in 1918-'19.)
Kester.
- 160.—OPTICAL INSTRUMENTS. Three hours credit. Second semester. Offered in alternate years.
T. T. Smith.
- 161.—ALTERNATING CURRENTS. Three hours credit. Second semester by appointment. Offered in alternate years. (Not offered in 1918-'19.)
M. E. Rice.
- 163.—PHYSICS COLLOQUIUM. One hour credit. Either semester, by appointment.
- 180.—TEACHERS' COURSE IN PHYSICS. Three hours credit. Second semester, by appointment.
Stimpson.
- 100.—INTRODUCTION TO CELESTIAL MECHANICS. Three hours credit. Second semester, by appointment. Prerequisites, astronomy 1, physics 5 and 6 or equivalent, analytical geometry, and calculus. (Not offered in 1918-'19.)
- 182.—SPHERICAL AND PRACTICAL ASTRONOMY. Throughout the year, by appointment. (Not offered in 1918-'19.)
- 184.—INTRODUCTION TO ASTROPHYSICS. Three hours credit. First semester, by appointment. (Not offered in 1918-'19.)
- 185.—THEORETICAL ASTRONOMY. Three hours credit. Second semester, by appointment. (Not offered in 1918-'19.)
- 186.—PRACTICAL WORK IN COMPUTING. Two hours credit. Second semester, by appointment. (Not offered in 1918-'19.)

PHYSIOLOGY.

Professors: HYDE, STOLAND.
Instructor: MILLS.

- 100.—ORIGINAL RESEARCH IN PHYSIOLOGY. Five to ten hours credit. Either semester.
Stoland.
- 150.—ADVANCED EXPERIMENTAL PHYSIOLOGY. Five hours credit. Both semesters.
Hyde.
- 151.—ADVANCED EXPERIMENTAL PHYSIOLOGY. Five hours credit. Both semesters.
Hyde.
- 152.—RESEARCH AND SEMINAR. Two to ten hours. Either semester. Research pertaining to the special senses, or nervous system, neuromuscular or circulatory systems; heart or blood or respiration. By appointment. Open to those prepared for it.
Hyde.
- 153.—ORIGINAL RESEARCH IN EXPERIMENTAL AND COMPARATIVE PHYSIOLOGY. Two to ten hours. Either semester. By appointment.

Investigation in comparative physiological studies of the functions and activities of different forms of life. Open to those prepared for it.

Hyde.

160.—NUTRITIONAL PHYSIOLOGY. Five hours credit. Second semester. Stoland.

161.—EXPERIMENTAL PHYSIOLOGY. Three to five hours credit. Both semesters. Stoland, Mills.

162.—PHYSIOLOGY OF THE ORGANS OF INTERNAL SECRETION. Three to five hours credit. Second semester. By appointment. Stoland.

163.—SPECIAL PROBLEMS IN PHYSIOLOGY. Two to seven hours credit. Both semesters. Stoland.

170.—MEDICAL PHYSIOLOGY. Ten hours credit. First semester. Stoland, Mills.

POLITICAL SCIENCE

Professor: DYKSTRA.

Associate Professor: MOORE.

100, 101.—SEMINAR. Three to five hours credit. First and second semester, hours by appointment. Individual investigation and group discussion under the direction of instructors in the department. The field of investigation will be determined from year to year after the organization of the seminar. Dykstra, Moore.

150.—MUNICIPAL ADMINISTRATION. Three hours credit. First semester, at 11. Dykstra.

151.—AMERICAN STATE GOVERNMENT. Two hours credit. Second semester, at 11. Dykstra.

152.—EUROPEAN GOVERNMENT. Three hours credit. First semester, at 11. Dykstra.

153.—THE JUDICIARY. Two hours credit. Second semester at 9. Moore.

154.—POLITICAL PARTIES. Two hours credit. First semester, at 11. Dykstra.

161.—INTERNATIONAL LAW. Three hours credit. First semester, at 10. Moore.

162.—ELEMENTARY LAW. Three hours credit. Second semester, at 10. Moore.

171.—PRINCIPLES OF POLITICAL SCIENCE. Three hours credit. First semester, at 9. Dykstra.

172.—HISTORY OF POLITICAL THEORIES. Two hours credit. Second semester. Dykstra.

ROMANCE LANGUAGES AND LITERATURES.

Professor: GALLOO.

Associate Professors: NEUEN SCHWANDER, OWEN.

Assistant Professors: STANTON, DERRY.

Instructors: MOLINA, CRAM.

100 and 101.—SEMINAR. Five hours credit. Each semester, by appointment. Research course for advanced students, who will be given an opportunity, under the immediate supervision of the department, to carry on investigation in the field of Romance linguistics or literature.

Galloo, Neuen Schwander, Owen.

188.—TEACHERS' COURSE. Three hours credit. First semester, by appointment. Neuen Schwander.

102.—COLLOQUIAL AND MEDIEVAL LATIN I. Two hours credit. First semester, by appointment. The development of Latin as a spoken language from the *sermo cotidianus* of classical antiquity, through its popular and scholastic use in the early Middle Ages, to its final disintegration in

vulgar speech, with constant reference to the phonology and the morphology of the Romance languages as exhibited in the earliest written forms.

Derry.

103.—COLLOQUIAL AND MEDIEVAL LATIN II. Two hours credit. Second semester, by appointment. A continuation of course 102.

Derry.

104.—OLD FRENCH. Three hours credit. First semester, by appointment. Phonology and morphology of old French, with some discussion of syntax. *Le Pèlerinage de Charlemagne à Jérusalem, Aucassin et Nicolette*. Must be preceded by courses 162 and 163 or their equivalents.

Galloo.

105.—HISTORY OF THE FRENCH LANGUAGE. Three hours credit. Second semester, by appointment. Its rise from Low Latin; the additions from other sources; its growth and modifications.

Galloo.

106.—MEDIEVAL FRENCH LITERATURE. Three hours credit. Second semester, by appointment. From the first literary monuments to the Renaissance.

Galloo.

107.—FRENCH LITERATURE OF THE SIXTEENTH CENTURY. Two hours credit. First semester, by appointment. The Renaissance in French literature. The beginning of classicism. *The Pléiade*.

Stanton.

108.—MOLIÈRE. Three hours credit. First semester, by appointment. Study of Molière; his life and surroundings; his plays—their sources and influence. One or more essays will be written, preferably in French.

Galloo.

150.—THE FRENCH ELEMENT IN ENGLISH. Three hours credit. Second semester, by appointment.

Neuen Schwander.

153.—HISTORY OF EARLY FRENCH LITERATURE. Three hours credit, first semester, by appointment.

Galloo.

154.—HISTORY OF MODERN FRENCH LITERATURE. Three hours credit. Second semester, by appointment.

155.—FRENCH LITERATURE OF THE SEVENTEENTH CENTURY. Two hours credit. First semester, by appointment.

Stanton.

156.—FRENCH LITERATURE OF THE EIGHTEENTH CENTURY. Two hours credit. Second semester, by appointment.

Neuen Schwander.

157.—THE ROMANTIC SCHOOL I. Three hours credit. First semester, by appointment.

Galloo.

158.—THE ROMANTIC SCHOOL II. Two hours credit. Second semester, by appointment.

Galloo.

159.—THE LITERARY MOVEMENT IN THE SECOND HALF OF THE NINETEENTH CENTURY. Three hours credit. First semester, by appointment. The reaction against romanticism, the Parnassiens, realism and naturalism. The reaction against the scientific spirit, idealism and symbolism. The rise and growth of the new literary criticism. A large amount of reading is required. Reports and an essay in French.

Galloo.

160.—DEVELOPMENT OF THE FRENCH NOVEL I. Two hours credit. First semester, by appointment.

Galloo.

161.—DEVELOPMENT OF THE FRENCH NOVEL II. Three hours credit. Second semester, by appointment.

Galloo.

162.—THE FRENCH DRAMA. Three hours credit. Second semester, by appointment.

Galloo.

163.—OLD FRENCH. Two hours credit. First semester, by appointment.

Galloo.

164.—OLD FRENCH. Two hours credit. Second semester, by appointment.

Galloo.

110.—PROVENÇAL. Two hours credit. First semester, by appointment. Grandgent's Provençal Phonology and Morphology, Appel's Provenzalische Chrestomathie and Schultz-Gora's Altprovenzalisches Elementarbuch. Neuen Schwander.

111.—PROVENÇAL. Two hours credit. Second semester, by appointment. A continuation of course 110. Neuen Schwander.

120.—EARLY SPANISH. Two hours credit. Second semester, by appointment. Menéndez Pidal's Manual de gramática histórica española; Poema del Cid (Menéndez Pidal ed.) and Poema de Fernán González (Marden ed.) Owen.

173.—DON QUIJOTE. Three hours credit. Second semester, by appointment. Molina.

174.—HISTORY OF EARLY SPANISH LITERATURE. Three hours credit. First semester, by appointment. Owen.

175.—HISTORY OF MODERN SPANISH LITERATURE. Three hours credit. Second semester, by appointment. Owen.

176.—THE SPANISH NOVEL OF THE SIXTEENTH AND SEVENTEENTH CENTURIES. Two hours credit. First semester, by appointment. Molina.

177.—THE CLASSIC SPANISH DRAMA. Two hours credit. Second semester, by appointment. Owen.

178.—CONTEMPORARY SPANISH LITERATURE. Three hours credit. First semester, by appointment. Owen.

130.—THE ITALIAN THEATER IN THE EIGHTEENTH CENTURY. Two hours credit. Second semester, by appointment. Lectures and reports. The Commedia dell' Arte. Reading of selected comedies of Goldoni and tragedies of Alfieri. Careful study of a few typical works. Prerequisite, course 34, or its equivalent. Cram.

131.—EARLY ITALIAN. Three hours credit. Second semester, by appointment. Monaci's Crestomazia italiana; d'Ancona and Bacci's Manuale della letteratura italiana, vol. I; Rossi's Storia della letteratura italiana, vol. I. Prerequisite, course 80, or its equivalent. Cram.

The following course is open to undergraduates also (for description, see College section).

180.—DANTE. Three hours credit. First semester, by appointment. Cram.

SOCIOLOGY.

Professor: BLACKMAR.

Associate Professor: HELLEBERG.

Assistant Professor: ELMER.

Instructor: BODENHAFFER.

Lecturers: DEACON, SIPPY.

100.—SEMINAR OF SOCIOLOGY. Two to ten hours credit. Either semester, by appointment. This is a research course for advanced students. Applicants for admission to the seminar must satisfy the instructors of their preparation and ability to undertake original investigation. Each student may pursue a definite line of work under the direction of one of the instructors. Helleberg.

101.—SEMINAR OF SOCIAL INVESTIGATION. Two to six hours credit. By appointment. A research course for advanced students. Applicants for admission to the seminar must satisfy the instructor of their preparation and ability to undertake original investigation. Each student may pursue a special line of social investigation. Blackmar.

102.—AMERICAN AND EUROPEAN CHARITIES. Five hours credit. By appointment. Research course. A study of charities administration in the United States and some of the principal cities of Europe. Personal investigation of American charitable institutions, with special reference to methods of state control. Bodenhafer.

103.—PREPARATION FOR INSTITUTIONAL AND SOCIAL SERVICE. Five hours credit. Second semester, by appointment. A study of the administration of charitable, penal, and social institutions. A research course in the library is supplemented by investigation of institutions by visitation. Lectures by experienced officials. Preparation for special positions.

Bodenhafer, Elmer.

104.—CRIMINOLOGY. Five hours credit. Second semester, by appointment. The modern theories of criminality. Case-study of the life history of criminals. A critical analysis of methods of classification and reformation.

Bodenhafer.

105.—EUGENICS. Three hours credit. Second semester, by appointment. A study of the agencies under social control that may improve or impair racial qualities, either mentally, morally, or physically. Organic evolution, genetics, or heredity is a prerequisite for this course. Zoölogy 4, 64, or 72 would be sufficient.

Blackmar.

150.—ELEMENTS OF SOCIOLOGY. Two hours credit. First and second semester. Open to students who do not major in sociology. Blackmar.

151.—PRINCIPLES OF APPLIED SOCIOLOGY. Three hours credit. Second semester. Elmer.

152.—SOCIAL PATHOLOGY. Two hours credit. First semester.

Bodenhafer.

153.—REMEDIAL AND CORRECTIVE AGENCIES. Two hours credit. Second semester. Bodenhafer.

154.—PUBLIC OPINION.—Three hours credit. Second semester.

Helleberg.

155.—PSYCHOLOGICAL SOCIOLOGY. Five hours credit. First semester.

Helleberg.

156.—THE FAMILY. Two hours credit. Second semester.

Helleberg.

157.—SOCIALISM. Two hours credit. First semester. Helleberg.

158.—GENERAL ANTHROPOLOGY. Two hours credit. First semester.

Blackmar.

159.—ETHNOLOGY. Two hours credit. Second semester. Blackmar.

160.—RURAL SOCIOLOGY. Two hours credit. Second semester.

Elmer.

161.—CONTEMPORARY SOCIETY IN THE UNITED STATES. Three hours credit. First semester. Helleberg.

162.—DEVELOPMENT OF SOCIAL THEORY. Five hours credit. Second semester. Helleberg.

163.—SOCIAL SURVEYS. Two hours credit. First semester. Elmer.

164.—MUNICIPAL SOCIOLOGY. Two hours credit. First semester.

Elmer.

165.—IMMIGRATION AND RACE PROBLEMS IN THE UNITED STATES. Three hours credit. First semester. Elmer.

166.—VITAL STATISTICS. One hour credit. Second semester.

Deacon, Sippy.

ZOOLOGY.

Professor: ALLEN.

Associate Professor: BAUMGARTNER.

Assistant Professors: ROBERTSON, NOWLIN.

100.—SEMINAR. Students working for a degree with the major in the department of zoölogy will register in this course for credit in work done in preparation for their theses. Credit will be given only upon a satisfactory presentation of the subject matter of the thesis before the department Faculty.

- 101.—PROBLEMS IN MORPHOLOGICAL ZOÖLOGY. Five or ten hours credit. Throughout the year. Baumgartner.
- 102.—PROBLEMS IN SYSTEMATIC AND DESCRIPTIVE ZOÖLOGY. Five or ten hours credit. Throughout the year.
- 103.—PROBLEMS IN HISTOLOGY AND CELLULAR BIOLOGY. Five or ten hours credit. Throughout the year, by appointment. Baumgartner.
- 104.—PROBLEMS IN VERTEBRATE PALEONTOLOGY. Five or ten hours credit. Throughout the year, by appointment.
- 105.—PROBLEMS IN EMBRYOLOGY. Five or ten hours credit. Throughout the year, by appointment. Allen.
- 106.—PROBLEMS IN GENETICS. Five or ten hours credit. Throughout the year, by appointment. Robertson.
- 107.—PROBLEMS IN PROTOZOÖLOGY. Five or ten hours credit. Throughout the year, by appointment. Nowlin.
- 108.—PROBLEMS IN PARASITOLOGY. Five or ten hours credit. Throughout the year, by appointment. Allen.
- 109.—PROBLEMS IN CYTOLOGY. Five or ten hours credit. Throughout the year, by appointment. Robertson.
- 150.—SYSTEMATIC ZOÖLOGY. Five or ten hours credit. Throughout the year.
- 151.—ORNITHOLOGY. Three hours credit. Second semester, by appointment.
- 152.—STUDY OF THE MAMMALS. Two hours credit. Second semester, by appointment.
- 153.—ANIMAL HISTOLOGY, OR MICROSCOPIC ANATOMY. Five hours credit. First semester. Baumgartner.
- 154.—THE CELL. Five hours credit. First semester. Robertson.
- 155.—EMBRYOLOGY. Five hours credit. Second semester. Allen.
- 156.—VERTEBRATE PALEONTOLOGY. Five hours credit. Second semester.
- 157.—PARASITOLOGY. Three hours credit. First semester. Allen.
- 159.—ECONOMIC ORNITHOLOGY AND MAMMALOGY. Five hours credit. Throughout the year, by appointment.
- 171.—PROTOZOÖLOGY. Five hours credit. First semester. Nowlin.
- 172a.—GENETICS. Three hours credit. Second semester. Robertson.
- 172b.—ANIMAL BREEDING. Two hours credit. Second semester. Robertson.
- 173.—ZOÖLOGICAL CONFERENCE. One hour credit. Both semesters, by appointment. Graduate and advanced undergraduate students meet with the instructors for the discussion of current zoölogical problems. Reports on assigned subjects.

SECTION III.

College of Liberal Arts and Sciences.

(101)

FACULTY.

FRANK STRONG, Ph. D., President.
OLIN TEMPLIN,* A. M., Dean and Professor of Philosophy.
DAVID L. PATTERSON, B. S., Assistant Dean and Professor of European History.
EPHRAIM MILLER, Ph. D., Emeritus Professor Mathematics and Astronomy.
EDGAR H. S. BAILEY, Ph. D., Professor of Chemistry and Metallurgy.
ALEXANDER M. WILCOX, Ph. D., Professor of Greek.
LUCIUS E. SAYRE, Ph. M., Professor of Pharmacy.
FRANK W. BLACKMAR, Ph. D., Professor of Sociology.
CHARLES G. DUNLAP, Litt. D., Professor of English Literature.
EDWIN M. HOPKINS, Ph. D., Professor of Rhetoric and English Language.
FRANK H. HODDER, Ph. M., Professor of American History and Political Science.
ERASMUS HAWORTH, Ph. D., Professor of Geology.
ARTHUR T. WALKER, Ph. D., Professor of Latin Language and Literature.
WILLIAM C. STEVENS,* M. S., Professor of Botany.
WILLIAM A. GRIFFITH, Professor of Drawing.
EUGENIE GALLOO, A. M., Professor of Romance Languages and Literatures.
CHARLES S. SKILTON, A. B., Professor of Musical Theory.
IDA H. HYDE, Ph. D., Professor of Physiology.
JAMES NAISMITH,* M. D., Professor of Physical Education.
SAMUEL J. HUNTER, A. M., Professor of Entomology.
FREDERICK E. KESTER, Ph. D., Professor of Physics.
HAMILTON P. CADY, Ph. D., Professor of Chemistry.
JOHN SUNDWALL, Ph. D., Professor on Anatomy.
FREDERICK H. BILLINGS,* Ph. D., Professor of Bacteriology.
BENNET M. ALLEN, Ph. D., Professor of Zoölogy.
EDMUND H. HOLLANDS, Ph. D., Professor of Philosophy.
FRANK B. DAINS, Ph. D., Professor of Chemistry.
ELMER F. ENGEL,* A. M., Professor of German.
JOHN N. VAN DER VRIES,* Ph. D., Professor of Mathematics.
ARTHUR MACMURRAY, A. B., Professor of Public Speaking.
ELIZABETH C. SPRAGUE,* Professor of Home Economics.
R. D. O'LEARY, A. B., Professor of English.
ARTHUR J. BOYNTON, A. M., Professor of Economics.
CHARLES H. ASHTON, Ph. D., Professor of Mathematics.
HENRY C. THURNAU, Ph. D., Professor of German.
FREDERICK R. HAMILTON, Ph. D., Director University Extension Division.
WILLIAM A. WHITAKER,* A. M., Professor of Metallurgy.
LEON N. FLINT, A. B., Professor of Journalism.
GEORGE E. COGHILL, Ph. D., Professor of Anatomy.
O. O. STOLAND, Ph. D., Professor of Physiology.
WALTER S. HUNTER, *Ph. D., Profesor of Psychology.
CARL F. NELSON, Ph. D., Professor of Physiological Chemistry.
CLARENCE A. DYKSTRA, A. B., Professor of Political Science.

* Absent on leave.

- MILES W. STERLING, A. M., Associate Professor of Greek.
 HANNAH OLIVER, A. M., Associate Professor of Latin.
 SELDEN L. WHITCOMB, A. M., Associate Professor of English Literature.
 MARTIN E. RICE, M. S., Associate Professor of Physics.
 LOUIS E. SISSON, A. M., Associate Professor of Rhetoric.
 ALBERTA L. CORBIN,* Ph. D., Associate Professor of German.
 WILLIAM J. BAUMGARTNER, A. M., Associate Professor of Zoölogy.
 HENRY O. KRUSE, A. M., Associate Professor of German.
 CLARENCE C. CRAWFORD, Ph. D., Associate Professor of European History.
 EARL W. MURRAY, A. B., Associate Professor of Latin.
 WILLIAM S. JOHNSON, Ph. D., Associate Professor of English Language.
 VICTOR E. HELLEBERG, A. B., Associate Professor of Sociology.
 MARGARET LYNN, A. M., Associate Professor of English Literature.
 ELISE NEUEN SCHWANDER, Ph. D., Associate Professor of Romance Languages.
 ARTHUR L. OWEN, A. M., Associate Professor of Romance Languages.
 HERMAN C. ALLEN, Ph. D., Associate Professor of Chemistry.
 WILLIAM W. DAVIS, Ph. D., Associate Professor of American History and Political Science.
 CHARLES A. SHULL, Ph. D., Associate Professor of Botany.
 ULYSSES G. MITCHELL, Ph. D., Associate Professor of Mathematics.
 FLOYD C. DOCKERAY,* Ph. D., Associate Professor of Psychology.
 JOSEPH G. BRANDT, Ph. D., Associate Professor of Greek.
 NOBLE P. SHERWOOD, A. M., Associate Professor of Bacteriology.
 HERBERT B. HUNGERFORD, A. M., Associate Professor of Entomology.
 BLAINE F. MOORE, Ph. D., Associate Professor of Political Science.
 ELLIS B. STOFFER, Ph. D., Associate Professor of Mathematics.
 FLORENCE BROWN SHERBON, M. D., Associate Professor of Physical Education.
 EVANGELINE DOWNEY TEETOR, A. M., Associate Professor of Home Economics.
 EDWIN F. STIMPSON, B. S., Assistant Professor of Physics.
 JAMES E. TODD, A. M., Assistant Professor of Geology and Mineralogy.
 EDWARD M. BRIGGS, A. M., Assistant Professor of German.
 ALBERT M. STURTEVANT, Ph. D., Assistant Professor of German.
 LULU GARDNER, A. B., Assistant Professor of Rhetoric.
 CLIFFORD C. YOUNG, A. B., Assistant Professor of Chemistry.
 ARTHUR MITCHELL,* Ph. D., Assistant Professor of Philosophy.
 FREDERICK A. G. COWPER, A. M., Assistant Professor of Romance Languages.
 WILLIAM R. B. ROBERTSON, Ph. D., Assistant Professor of Zoölogy.
 THEODORE T. SMITH,* A. M., Associate Professor of Physics.
 PAUL V. FARAGHER, Ph. D., Assistant Professor of Chemistry.
 EDMUND D. CRESSMAN, Ph. D., Assistant Professor of Latin.
 WALTER S. LONG, A. M., Assistant Professor of Chemistry.
 NADINE NOWLIN, A. M., Assistant Professor of Zoölogy.
 HERMAN DOUTHITT,† Ph. D., Assistant Professor of Zoölogy.
 GEORGE W. STRATTON, Ph. D., Assistant Professor of Chemistry.
 WILLIAM M. DUFFUS, A. M., Assistant Professor of Economics.
 GRACE M. CHARLES, Ph. D., Assistant Professor of Botany.

* Absent on leave.

† Died October 24, 1917.

- JOSEPHINE M. BURNHAM, Ph. D., Assistant Professor of English.
 JOHN W. EVANS,* A. B., Assistant Professor of Journalism.
 FRANK E. MELVIN, Ph. D., Assistant Professor of Modern European History.
 FREDERICK W. BRUCKMILLER, A. M., Assistant Professor of Chemistry.
 ROSE R. MORGAN, A. M., Assistant Professor of Rhetoric.
 AMIDA STANTON, A. M., Assistant Professor of Romance Languages.
 HELEN G. JONES, A. M., Assistant Professor of German.
 MANUEL C. ELMER, Ph. D., Assistant Professor of Sociology.
 RAYMOND C. MOORE, Ph. D., Assistant Professor of Geology and Paleontology.
 WINTHROP P. HAYNES, Ph. D., Assistant Professor of Geology and Mineralogy.
 JOHN ISE, Ph. D., Assistant Professor of Economics.
 SAMUEL O. RICE, Assistant Professor of Journalism.
 MAY GARDNER, A. B., Assistant Professor of Romance Languages.
 WADE D. ALTER,* Ph. D., Assistant Professor of Astronomy.
 JOHN R. FRAZIER, Assistant Professor of Design.
 SAMUEL S. CATELL, A. M., Assistant Professor of Economics and Commerce.
 MARK A. SMITH,* A. M., Assistant Professor of Economics and Commerce.
 CLARENCE ESTES, B. S., Assistant Professor of Chemistry.
 EDMUND V. GAGE, A. M., Assistant Professor of Romance Languages.
 GORDON L. CRAM, A. M., Assistant Professor of Romance Languages.
 VAUGHN BRYANT, B. S., Assistant Professor of Journalism.
 GEORGE H. DERRY, Ph. D., Assistant Professor of Romance Languages.
 HOWARD T. HILL, B. S., Assistant Professor of Public Speaking.
 MAXWELL FERGUSON, LL. B., Assistant Professor of Economics and Commerce.
 ELIZABETH N. SMITH, A. B., Assistant Professor of Home Economics.
 GROVER C. LOUD, A. B., Assistant Professor of Journalism.
 LALIA V. WALLING, A. M., Instructor in Physiology.
 ESTER WILSON, A. M., Instructor in German.
 ALICE WINSTON, A. M., Instructor in Rhetoric.
 MARIA L. BENSON, Instructor in Design and Ceramics.
 HEARTY E. BROWN, A. M., Instructor in Rhetoric.
 SARA G. LAIRD, A. M., Instructor in Rhetoric.
 HELEN R. HOOPES, A. M., Instructor in Rhetoric.
 CAROLINE B. SPANGLER, A. B., Instructor in German.
 WILLARD A. WATTLES, A. M., Instructor in Rhetoric.
 ESTHER L. SWENSON, A. M., Instructor in Rhetoric.
 HAZEL K. ALLEN, Ph. B., Instructor in Home Economics.
 HAZEL H. PRATT, A. B., Instructor in Physical Education.
 LAURENS E. WHITTEMORE,* A. M., Instructor in Physics.
 CLIFFORD W. SEIBEL, B. S., Instructor in Chemistry.
 WALTER B. BODENHAFFER, A. M., Instructor in Sociology.
 PETER A. F. APPELBOOM,* Instructor in Romance Languages.
 DONALD G. PATERSON,* A. M., Instructor in Psychology.
 EARLE B. MILLER, A. M., Instructor in Mathematics.

* Absent on leave,

ARTHUR J. MIX, Ph. D., Instructor in Plant Pathology.
 DANIEL DA CRUZ, Ph. D., Instructor in Romance Languages.
 BERTHA MIX, A. B., Instructor in Physical Education.
 FELIPE MOLINA, B. L., Instructor in Romance Languages.
 EMILY V. BERGER, A. B., Instructor in Chemistry.
 SYBIL WOODRUFF, A. B., Instructor in Home Economics.
 PAUL B. LAWSON, A. B., Instructor in Entomology.
 AGNES A. MURRAY, A. M., Instructor in Chemistry.
 WILBUR N. SWINGLE, A. M., Instructor in Zoölogy.
 HAZEL M. RICE, Instructor in Mathematics.
 JAMES B. RAMSEY, A. B., Instructor in Chemistry.
 CLARENCE A. MILLS, A. B., Instructor in Physiology.
 ELBERT L. TREECE, B. S., Instructor in Bacteriology.
 CORNELIA M. DOWNS, A. B., Instructor in Bacteriology.
 ELIZABETH C. MEGUIAR, Instructor in Home Economics.
 WILLIAM A. DILL, A. B., Instructor in Journalism.
 GERTRUDE T. HAZEN, A. M., Instructor in Home Economics.
 JOSE M. OSMA, Instructor in Romance Languages.
 HENRI TAILLIART, Instructor in Romance Languages.
 ALDA B. HUNTER, A. M., Instructor in Psychology.
 RUBY V. COOK, A. B., Instructor in Physical Education.
 BERNARD F. JENSEN, Instructor in Physical Education.
 LOUIS J. BOURDON, Instructor in Romance Languages.
 JAMES E. BOND, Instructor in Physical Education.
 BESSIE DOUTHITT, Instructor in Zoölogy.
 WILLIS H. BELTZ, Radio Code Instructor.
 HUBERT SHEPPARD, A. M., Instructor in Psychology.
 IDA FARAGHER, Instructor in Psychology.
 ARTHUR W. LARSON, A. M., Instructor in Mathematics.
 AMY V. RADER, A. B., Instructor in Chemistry.
 GENEVRA E. PARKER, B. O., Instructor in Public Speaking.
 JOSEPH H. A. BEAUPARLANT, Instructor in Romance Languages.
 LARRY M. PEACE, A. M., Preparator and Demonstrator in the Botanical Laboratory.
 WILLIAM B. BROWN, Assistant Instructor in Journalism.
 KATE SEARS, Assistant Instructor in Botany.
 RAY Q. BREWSTER,* A. M., Assistant Instructor in Chemistry.
 ALICE L. BROWN, A. B., Assistant Instructor in Zoölogy.
 MARY L. BACON, A. B., Assistant Instructor in Physical Education.
 J. D. M. CROCKETT, Lecturer on Accounting.
 S. HERBERT HARE, M. L. A., Lecturer on Landscape and Garden Design.

ADMINISTRATIVE COMMITTEE.

OLIN TEMPLIN, *Chairman.*

D. L. PATTERSON.

B. M. ALLEN.

E. W. MURRAY.

F. B. DAINS.

E. H. GALLOO.

F. E. KESTER.

U. G. MITCHELL, *Secretary.*

* Absent on leave.

THE COLLEGE OF LIBERAL ARTS AND SCIENCES.

The College was the first school of the University to be organized. From its opening in 1866 it has offered to its students four years of liberal training, leaving in the main the development of the applied arts and sciences to the professional schools that have grown up around it.

DEGREES.

Graduates of the College who have completed the regular College course are admitted to the degree of *Bachelor of Arts*, except that, upon request, any candidate who has met the requirements for that degree will be admitted to the degree of *Bachelor of Science* instead; provided, the larger part of his work has been elected in science departments; and provided further, his application has the sanction of the department in which his major work has been done. Those who have completed two years of College work and two years in the School of Medicine are admitted to the degree of Bachelor of Science in Medicine.

ADMISSION.

By act of the state legislature all graduates of accredited high schools in Kansas are admitted to the Freshman class without examination or condition.

Candidates for admission who are not graduates of accredited Kansas high schools must offer, either on examination or satisfactory certificate, fifteen units from the following list:

ENGLISH.—Rhetoric and English literature, 3 or 4 units. Three units required.

MATHEMATICS.—Elementary algebra, $1\frac{1}{2}$ units; plane geometry, 1 unit; solid geometry, $\frac{1}{2}$ unit; plane trigonometry, $\frac{1}{2}$ unit; advanced algebra, $\frac{1}{2}$ unit. Elementary algebra and plane geometry are required.

FOREIGN LANGUAGE.—Latin, 1, 2, 3 or 4 units; Greek, 1, 2, 3 or 4 units; German, 1, 2, 3 or 4 units; French, 1, 2, 3 or 4 units; Spanish, 1 or 2 units. Three units in one language, or two units in one language and one unit in another, are required.

PHYSICAL SCIENCES.—Physical geography, 1 or $\frac{1}{2}$ unit; physics, 1 unit; chemistry, 1 unit. One unit required.

BIOLOGICAL SCIENCES.—Botany, 1 unit; zoölogy, 1 unit; physiology, 1 or $\frac{1}{2}$ unit; biological science, 1 unit. One unit required.

HISTORY AND SOCIAL SCIENCE.—Greek and Roman history, 1 unit; medieval and modern history, 1 unit; English history, 1 unit; American history, 1 unit; economics, 1 or $\frac{1}{2}$ unit; civics, $\frac{1}{2}$ unit. One unit required.

MISCELLANEOUS.—Psychology, $\frac{1}{2}$ unit; methods of teaching and school management, $\frac{1}{2}$ unit; commercial law, $\frac{1}{2}$ unit; bookkeeping, $\frac{1}{2}$ unit; drawing, 1 unit; wood-work, 1 unit; forging, 1 unit; domestic science, 1 unit; domestic art, 1 unit; agriculture, $\frac{1}{2}$ or 1 unit; music, 1 unit. Not more than three units are accepted.

Any candidate from another state will be accepted on certificate, provided he is eligible to admission to the state university in that state, and provided he has completed the subjects required for graduation from an accredited Kansas high school.

Entrance Examinations.

Candidates for admission who are not graduates of accredited Kansas high schools may offer themselves for examination in the entrance subjects above specified. A schedule of these examinations will be found on page 48 of Section I, "General Information."

Advanced Standing.

Credit for work of collegiate or professional standing is granted only on recommendation of the Advanced Standing Committee.

For regulations governing the granting of such credit see Admission to Advanced Standing, Section I, page 49.

Special Students.

Persons of maturity and of serious purpose, who are not candidates for the College degree and who present satisfactory reasons for asking such exceptional consideration, may be admitted to the College as special students, subject to the provisions stated below:

Any one regularly enrolled in another school of the University may be admitted as a special student to College classes, but all applications for such enrollment must be accompanied by the recommendation of the Dean of the school concerned. Such students are subject to the same regulations as other special students.

Each candidate for admission as a special student must personally file with the Faculty Committee an application stating his reasons for his request, and must submit credentials from schools previously attended showing character and extent of preparation for the classes to which he desires admission. He must also submit to such examination as the committee or the department concerned may prescribe. This application must be renewed each semester.

The Faculty Committee, subject to the approval of instructors or heads of departments concerned, will determine what courses the candidate is prepared to pursue with profit, and will outline his program of studies for the semester. The Registrar will register a special student only upon the authorization of the Faculty Committee.

Special students are subject to the general regulations regarding prerequisites, number of hours, attendance, examinations, quality of work, etc. Failure in any course, or a low grade in previous work, may be considered sufficient ground for refusal to allow subsequent enrollment as a special student.

The Dean may withdraw the privileges of any special student who, in his judgment, is failing to comply with the spirit of the foregoing provisions.

If a special student later becomes a candidate for a degree, the credits he has received while enrolled as a special student will not be allowed to count towards this degree, except by the approval of the Faculty.

Extension Division Credits.

College students may offer towards the degree not to exceed sixty hours of credit received for work done in the Extension Division, but such credits will not be placed on their College record until thirty hours have been completed in residence.

All regulations governing the election of courses and final residence must have been observed by the candidate for the degree.

REGISTRATION.

All candidates for admission having certificates from schools accredited by the State Board of Education and all students of the University intending to pursue their studies during the ensuing year must present themselves for registration at the University on September 16, 17, 18. *Registration at a later date will be permitted only on the payment of a fee of one dollar.*

ENROLLMENT.

After registration has been completed with the Registrar, and fees have been paid, students should apply to the Dean for enrollment in their classes. Enrollment the first semester occurs September 17 and 18, and on the first day of the second semester. *Enrollment at a later date will be permitted only on the payment of a fee of one dollar.*

Each student is assigned to a member of the Faculty as his personal adviser, who will assist him in the selection of courses, the arrangement of his schedule, and any other matters upon which he may need assistance or advice. The Faculty adviser is the assistant and representative of the Dean of the College, who is charged with the execution of all rules relating to enrollment.

COMPLETION OF REQUIREMENTS. A student may not be enrolled in any subject in advance of any other which, for any reason, he has yet to take, and which is listed in the schedule.

A student desiring enrollment in courses which presuppose certain subjects which he has not completed in the preparatory school must first make good such preliminary training within a high school or under a tutor authorized by the department concerned.

FAILURES AND CONDITIONS. If the record of a student shows that he has failed in a course, or if he has received a condition which has not been removed during the previous semester, he must reënroll in the course, if it is listed in the schedule.

THE CREDIT HOUR.

For each credit hour of any course in the College the student is expected to devote himself for three hours, either in the classroom, laboratory, or outside preparation.

SCHOLARSHIPS.

For information in regard to scholarships and aid funds available for College students, reference is made to page 53 of Section I, "General Information."

FEES AND EXPENSES.

For information in regard to fees and expenses reference is made to page 51, Section I, "General Information." All course fees must be paid before enrollment in classes will be permitted.

THE CURRICULUM.

DEPARTMENTS OFFERING COURSES IN THE COLLEGE.

<i>Group.</i>	<i>Department.</i>
I. <i>English.</i>	English Language and Literature. Journalism. Public Speaking.
II. <i>Ancient Language.</i>	Greek Language and Literature. Latin Language and Literature.
III. <i>Modern Language.</i>	Germanic Languages and Literatures. Romance Languages and Literatures.
IV. <i>Mathematics.</i>	Mathematics.
V. <i>Physical Science.</i>	Chemistry. Physics and Astronomy. Geology and Mineralogy.
VI. <i>Biological Science.</i>	Botany. Zoölogy. Entomology. Physiology. Bacteriology. Anatomy.
VII. <i>History.</i>	History. Economics and Commerce. Sociology. Political Science.
VIII. <i>Philosophy.</i>	Philosophy and Psychology.
IX. <i>Miscellaneous.</i>	Home Economics. Physical Education. Design. Music.
X. <i>Professional.</i>	Law (fifteen hours, open to College Seniors). Medicine. (See Medicine under "Description of Courses.") Engineering (fifteen hours, open to College students). Education (fifteen hours, open to College students). Fine Arts (fifteen hours, open to College Juniors and Seniors).

REGULATIONS GOVERNING THE ELECTION OF COURSES.

In the choice of courses from these groups and departments the student must conform to the following regulations:

FRESHMAN-SOPHOMORE REQUIREMENTS. During the first semester every Freshman must attend a weekly lecture on hygiene, and spend three hours a week in the gymnasium. During the second semester he must spend three hours a week in the gymnasium.

During the entire year every Sophomore must spend two hours a week in the gymnasium.

Before the beginning of the Junior year the student must have completed sixty hours, chosen from the list of courses open to Freshmen and Sophomores in accordance with the following requirements:

a. At least five hours must be taken from each of six of the first eight groups.

b. Not more than twenty hours may be taken in one department.

c. Rhetoric, five hours, must be taken by all Freshmen not offering it as a fourth year of entrance English. Credits for rhetoric are given provisionally. (See announcement of course.)

d. Freshmen and Sophomores *may not carry more than ten hours in one group at one time.*

JUNIOR-SENIOR REQUIREMENTS. The work of the Junior and Senior years must include a minimum of sixty hours, chosen from the courses offered by the various departments, but not more than twenty hours may be in courses open to either Freshmen or Sophomores.

Juniors and Seniors *may carry not more than twelve hours in one group at one time.*

THE LAST THIRTY HOURS MUST BE DONE IN RESIDENCE.

MAJOR REQUIREMENTS. Before graduation the student must complete a major course of not less than twenty hours nor more than forty hours in one department, and not less than thirty hours nor more than sixty hours in the group including the major department. At least twelve hours of work in satisfaction of the department major requirements must be in courses not open to Freshmen or Sophomores.

The courses constituting a departmental major must be chosen under the supervision of the Faculty of the department concerned.

In the selection of a major the School of Medicine is considered a department.

FREE ELECTIVES. The work required for graduation not included in the major course is to be chosen subject to the restrictions that not more than twenty-five hours may be in any department, and not more than forty hours may be in any group other than the one in which the major course is elected.

RULE FOR STUDENTS HAVING ADVANCED CREDITS. Students who have been granted advanced credits shall so select their studies that in the one hundred twenty hours offered for the degree the regulations governing the distribution of work shall be satisfied so far as possible; provided, that advanced credit in excess of the maximum prescribed for majors and minors may be granted the candidate at the time of his matriculation. Students admitted to Junior standing with a deficiency must meet the requirements respecting studies of the first two years only to the extent of their deficiency.

AMOUNT OF WORK TO BE CARRIED AT ONE TIME. Students of the College must be enrolled in not less than fourteen nor more than eighteen hours of work, including Hygiene and Gymnasium, but all applications for enrollment are subject to the approval of the Dean. When the past record or current work of a student indicates that he is unable to carry advantageously the amount of work permitted by the above regulation, he may be limited in his enrollment to such extent as may be considered advisable in his case. The Faculty urges students to confine themselves to the average number of fifteen hours of class work, and thus devote four full years to the completion of their undergraduate work. Experience has shown that the crowding of the undergraduate courses results in serious loss in the quality of the work accomplished.

DUPLICATION OF COURSES. No course may be chosen which substantially duplicates work for which credit has already been granted, either in the College or preparatory school.

AMOUNT OF WORK REQUIRED FOR GRADUATION. In order to be an applicant for a degree from the College of Liberal Arts and Sciences a student must complete 120 hours of class work, in addition to required hygiene in the Freshman year and required gymnasium work in the Freshman and Sophomore years.

STUDENT'S RESPONSIBILITY. The individual student will be held responsible for the election of his courses in conformity with the preceding regulations.

PROPORTION OF HIGH GRADES REQUIRED FOR DEGREE. In order to be accepted as a candidate for the bachelor's degree, a student must have received a grade of A, B, C, I (one) or II in at least 90 of the 120 hours offered for the A. B. degree or of the number of hours required for the degree of A. B. or B. S. in medicine; provided that students graduated before September 1, 1918, shall be required to have a grade of A, B, C, I (one) or II in 80 hours, and students graduated after September 1, 1918, and before September 1, 1919, shall be required to have a grade of A, B, C, I (one) or II in 85 hours. Any student admitted to advanced standing will be accepted as a candidate for a degree, provided his credits offered for graduation conform to the foregoing regulations and provided he receives A, B, C, I (one) or II on three-fourths of the work which he has done in residence at the University of Kansas.

COLLEGE CREDIT FOR PROFESSIONAL COURSES.

Juniors and Seniors in the College are permitted to enroll in certain courses offered in the professional schools and count the credit received for such work towards the bachelor of arts degree, *but no student is permitted to offer credit from more than one professional school.* The amount of credit that may be thus used is subject to the limitations indicated below. Students desiring to avail themselves of this opportunity must register in the professional school as well as in the College, but in enrollment the regulations of the College Faculty governing quantity and character of courses elected must be observed.

SCHOOL OF LAW.—Seniors in the College may offer fifteen hours from certain courses in the curriculum of the School of Law. See Section VI.

SCHOOL OF EDUCATION.—Students in the College may elect not to exceed fifteen hours from certain courses in the School of Education. See Section IX.

SCHOOL OF ENGINEERING.—A maximum of fifteen hours may be elected by the College student from certain courses offered in the School of Engineering. See Section IV.

SCHOOL OF FINE ARTS.—Juniors and Seniors in the College may be enrolled in not to exceed fifteen hours of certain courses in the School of Fine Arts. See Section V.

SCHOOL OF MEDICINE.—For conditions of election of courses in the School of Medicine. See Section VIII.

DESCRIPTION OF COURSES†.

ANATOMY.

Professors: SUNDWALL (Head of Department), COGHILL.

1.—INTRODUCTORY ANATOMY. Five hours credit. First semester, 8 to 10. A course on the structure of the human body especially for those students who are not preparing for medicine. Sundwall.

50.—HUMAN ANATOMY. Five hours credit. First semester. Courses up to five hours may be selected from the following which are scheduled in the school of medicine: Sundwall.

1.—DISSECTION OF THE ARM AND THORACIC WALL. Three hours credit. Fee, \$5.

2.—DISSECTION OF THE LEG, PERINEUM AND ABDOMINAL WALL. Three hours credit. Fee, \$5.

3.—DISSECTION OF THE THORACIC AND ABDOMINAL VISCERA. Four hours credit. Fee, \$5.

4.—DISSECTION OF THE HEAD AND NECK. Four hours credit. Fee, \$5.

5.—HUMAN OSTEOLOGY. One hour credit. A systematic study of the human skeleton. Supplemented by drawings, clay modeling, etc.

51.—HUMAN ANATOMY. Five hours credit. Second semester. A continuation of Anatomy 50. Sundwall.

54.—HISTOLOGY. Five hours credit. First semester. This course is identical with that of the first semester of the medical curriculum, to which reference is made for complete description. Coghill.

55.—NEUROLOGY. Three hours credit. Second semester. This course is identical with that of the medical curriculum, to which reference is made for complete description. Coghill.

ASTRONOMY.

(See Physics and Astronomy.)

BACTERIOLOGY.

Professor: BILLINGS* (Head of Department).

Associate Professor: SHERWOOD.

Instructors: TREECE, DOWNS.

EQUIPMENT. The laboratories are provided with sterilizers, incubators, refrigerators, centrifuges, glassware, etc. A compound microscope with high-power lens, a set of stains, and other equipment are allotted each student. The Water Survey laboratory is equipped for both bacteriological and chemical investigation, and is available to a few well-prepared research students by special arrangement.

* Absent on leave, 1917-18.

† NUMBERS OF COURSES. Courses with numbers from 1 to 49 are open to Freshmen and Sophomores; courses marked with an asterisk (*) are reserved for Sophomores; courses marked with a double asterisk (**) are required of Freshmen.

Courses with numbers from 50 to 99 are open to Juniors and Seniors on the conditions stated in each case. Many of these courses are also open to graduate students; these are listed under the Graduate School, with numbers increased by 100.

DAYS OF MEETING. Courses giving five hours credit meet daily from Monday to Friday, inclusive.

Courses giving three hours credit meet on Monday, Wednesday and Friday, unless otherwise specified.

Courses giving two hours credit meet on Tuesday and Thursday, unless otherwise specified.

ADVICE AS TO CHOICE OF COURSES. Course 1, course 50, or course 51 is a prerequisite for all subsequent courses in bacteriology. Each is directly concerned with the application of bacteriology to human problems. Students who plan to study bacteriology with the expectation of teaching the subject, or of entering a public-health laboratory, should complete the following courses in other departments: Inorganic chemistry, qualitative analysis, organic chemistry, chemical analysis of foods, chemical water analysis, quantitative analysis, physiological chemistry, general morphology of plants, plant physiology, elementary zoölogy, animal histology, parasitology, protozoölogy, German (15 hours), human anatomy, medical physiology, and pathology.

Students expecting to go into medicine should not fail to enter the section of general bacteriology that is prescribed for medical students. See the announcement of the department of bacteriology in the School of Medicine.

50.—GENERAL BACTERIOLOGY. Five hours credit. Both semesters; first semester, 10 to 12 and 1 to 3; second semester, 8 to 10 and 10 to 12. Lectures and laboratory work. The lectures are largely illustrated and treat problems connected with general bacteriology and with the relation of bacteria to public health. Laboratory work deals with the preparation of media, cultural and staining methods, diagnostic tests, and the examination of bacteria that bear some relation to everyday life. Prerequisite, chemistry 1 or equivalent. Fee, \$5.

Sherwood, Treece, Downs.

53.—BACTERIOLOGY OF FOODS. Five hours credit. Second semester, 1 to 3. Examination of milk, oysters, meats, etc., with supplementary lectures. Fee, \$5.

Treece.

54.—SPECIAL METHODS IN BACTERIOLOGY. Five hours credit. First semester, 10 to 12. The laboratory work embraces the use of special media, the preparation of vaccines, and diagnostic technic, such as that used in public health laboratories. Methods in sanitary examination of water constitute part of the course. Fee, \$5.

Sherwood, Downs.

55.—BACTERIOLOGY OF SOILS. Two hours credit. Second semester, 1 to 3. A laboratory study of the influence exerted by bacteria on the composition of soils. Fee, \$2. Offered 1919-'20.

Treece.

57.—IMMUNOLOGY. Five hours credit. First semester, 10 to 12. Laboratory study of precipitins, agglutinins, bacteriolysins, and complement fixation. Fee, \$5.

Sherwood, Downs.

58.—PATHOGENESIS. Five hours credit. First semester, 8 to 10. A detailed study of lesions caused by bacteria. Prerequisites, course 50 and animal histology. Offered in 1919-'20. Fee, \$5.

Sherwood.

60.—BACTERIOLOGICAL JOURNALS. One hour credit. First semester, by appointment. Reviews and discussions of current bacteriological literature.

Sherwood.

61.—SPECIAL PROBLEMS IN BACTERIOLOGY. Two to ten hours credit. Both semesters, by appointment. Special work along some definite line with a view of obtaining familiarity with a particular kind of laboratory procedure. Fee, \$1 for each hour of enrollment.

Sherwood and the instructor concerned.

BOTANY.

Professor: STEVENS.*

Associate Professor: SHULL (Chairman of Department).

Assistant Professors: CHARLES, STERLING, MIX.

Assistant Instructor: SEARS.

Preparator and Demonstrator: PEACE.

Lecturer: HARE.

EQUIPMENT. The equipment embraces microtomes, paraffin baths, etc., for histological work, simple and compound microscopes for each student, individual sets of apparatus for physiological experiments, and equipment for advanced work in plant physiology and pathology, a good herbarium for reference in taxonomy, sets of morphological slides for each student, and abundant morphological material. There is a departmental library adjoining the laboratories.

ADVICE AS TO CHOICE OF COURSES. Courses 1 and 2 are elementary in their respective fields and are without prerequisites. Not more than one of these elementary courses should be taken without consultation with the department. Students who are preparing to teach botany should take courses 1 or 51, 2, 3, 4, 50, 52, 60, 61, 62, and bacteriology 50. Courses 1 or 51 and 55 in botany and 50 in bacteriology afford a good basis for sanitation. Courses 3, 60, and 52, and 62 are fundamental to scientific plant culture. Botany 1, and 4 and 61 and bacteriology 50 would be especially useful to students in home economics. Courses 3, 4, 50, 61, and 62 are fundamental to arboriculture, city forestry, and the horticultural side of landscape and garden design.

1.—GENERAL MORPHOLOGY OF PLANTS. Five hours credit. First semester. Lectures and recitations, Tu. Th., at 10. Laboratory, M. W. F., 10 to 12. A general survey of the great groups of plants to show the important steps in the evolution of the plant kingdom. Fee, \$2.00.

Charles.

2.—THE LIVING PLANT. Five hours credit. Both semesters, M. W. F., 8 to 10; Tu. Th., 8 to 9. What plants reveal about the fundamental problems of life, and their relation to our welfare. Lectures, demonstrations, and recitations. Fee, \$1.

Stevens.

3.—PLANT PHYSIOLOGY. Five hours credit. Second semester, M. W. F., 10 to 12; Tu. Th., 11 to 12. The physiological activities of plants. Intake and outgo of material and energy, photosynthesis, digestion, translocation, storage, assimilation, respiration, excretion, irritability, and tropic responses, etc. Prerequisite, course 1 or its equivalent, or 2. Desirable antecedent, chemistry. Fee, \$2.

Shull.

4.—PLANT HISTOLOGY. Two hours credit. First semester, Tu. Th., 10 to 12. A study of plant tissues with special reference to their development and functions; plant products, their origin and physiological and biological significance; histological technique. Laboratory work, recitations and lectures. Prerequisite, course 1 or its equivalent, or 2. Fee, \$1.

Stevens, Peace.

50.—SYSTEMATIC BOTANY. Five hours credit. First semester. Lectures and recitations, Tu. Th., at 9. Laboratory, M. W. F., 8 to 10. Field trips Saturday mornings till November. Classification of flowering plants, with field study of local flora, and preparation of an herbarium. Prerequisite, course 1 or 2, or equivalent. Fee, \$1.

Charles.

51.—GENERAL MORPHOLOGY OF PLANTS. Five hours credit. Second semester. Lectures and recitations, Tu. Th., 10. Laboratory, M. W. F., 10 to 12. A study of types of plants to show the development of the plant kingdom. Fee, \$2.

Charles.

52.—PLANT GENETICS. Five hours credit. Second semester, M. W. F., 8 to 10; Tu. Th., 9 to 10. The problems of variation, heredity, and

* Absent on leave, first semester.

the improvement of plants by scientific pedigree methods. Prerequisite, course 1 or 2, and 3. Desirable antecedent, course 60. Fee, \$1. Shull.

53.—PLANT PHYSICS. Five hours credit. First semester, M. W. F., 1 to 3; Tu. Th., 2 to 3. A course dealing with the most recent advances in our knowledge of those phases of the plant's activities which are essentially physical. Prerequisites, courses 1 or 2, and 3, and physics 1 or its equivalent. Desirable antecedents, Physics 6a and 6b. Open only to Seniors and graduates. Fee \$2. Shull.

54.—PLANT CHEMICS. Five hours credit. Second semester, M. W. F., 1 to 3; Tu. Th., 2 to 3. An advanced course in vegetable metabolism, dealing with recent advances in the chemistry of plant processes. prerequisite, course 53 or equivalent. Desirable antecedents, chemistry 2 and 4, and biological chemistry 50. Not open to Juniors. Fee, \$2.50. Shull.

55.—MORPHOLOGY OF ALGÆ. Three or five hours credit. Second semester, by appointment. An advanced course in the algæ with particular attention to life histories, local distribution and relation to water supplies. Prerequisite, course 1 or equivalent. Fee, \$2. Charles.

56.—MORPHOLOGY OF FUNGI. Three hours credit. Second semester, 8 to 10. Lectures, recitations, and laboratory work on the structure and life histories of fungi. Prerequisite, course 1, or equivalent. Fee, \$2. Charles.

57.—MORPHOLOGY OF BRYOPHYTES AND PTERIDOPHYTES. Three or five hours credit. First semester, 1 to 3. An advanced course on the development and classification of liverworts and mosses. Lectures and laboratory work. Prerequisite, course 1 or equivalent. Fee, \$2. Charles.

58.—PROBLEMS IN THE MORPHOLOGY OF SPERMATOPHYTES. Five hours credit. Both semesters, by appointment. A study of the forms and structures of plant members under different environments. Laboratory work, field work, and reading. Fee, \$1. Stevens.

59.—PROBLEMS IN THE MORPHOLOGY OF THALLOPHYTES AND ARCHEGONIATES. Five hours credit. Both semesters, by appointment. A study of the structure, development, or distribution of plants of these groups. Laboratory, field work, and reading. Prerequisite, course 1 or equivalent, and advanced work in the group to be investigated. Charles.

60.—AGRICULTURE. Three hours credit. First semester, 8 to 10. A course dealing with the scientific principles underlying plant production and soil management. This course should be taken in conjunction with entomology 60. Prerequisites, course 3 and entomology 1, or their equivalents. Fee, \$1. Shull.

61.—TREES AND SHRUBS. Three hours credit. Second semester, M. W. F., 2 to 3. A study of the nature, planting, and care of the trees and shrubs of special importance in planting home grounds, streets, and parks, and an introduction to landscape design. Lectures, reading, and field work. Stevens and Hare.

62.—PLANT PATHOLOGY. Five hours credit. First semester, 1 to 3. Diseases of cultivated plants, their nature, cause and control. Lectures, recitations, and laboratory work. Prerequisite, course 1 or its equivalent, or 2. Desirable antecedent, course 3. Fee, \$2. Mix.

63.—METHODS IN PLANT PATHOLOGY. Five hours credit. Second semester, 10 to 12. A study of methods for the control of plant diseases; technique of isolation, culture, and inoculation of plant parasites. Lectures, recitations, laboratory and field work. Prerequisite, course 62 or its equivalent. Fee, \$2. Mix.

64.—PROBLEMS IN PLANT PATHOLOGY. Three to five hours credit. Both semesters, by appointment. Original investigation of problems in plant pathology. Prerequisites, courses 3, 62 or its equivalent, and bacteriology 50. Should be preceded or accompanied by course 63. Open only to Seniors and Graduates. Fee, \$2. Mix.

CHEMISTRY.

Professors: BAILEY (Head of Department), CADY,
DAINS, WHITAKER.

Associate Professor: ALLEN.

Assistant Professors: FARAGHER, STRATTON, LONG,
BRUCKMILLER, ESTES.

Instructors: SEIBEL, BREWSTER,* BERGER, RAMSAY,
LAIRD.

Assistant Instructors: MURRAY, RADER.

EQUIPMENT. The department is well supplied with the necessary and usual apparatus for lecture illustration and demonstration, for laboratory work in the undergraduate courses, together with adequate equipment for effective research work in physical, organic, inorganic, analytical, industrial, and metallurgical chemistry. The liquid-air plant offers somewhat unusual opportunities for investigations at low temperatures. The department possesses a library of 3,000 volumes, consisting of the more important sets of periodicals and standard works of reference.

ADVICE AS TO CHOICE OF COURSES. Students desiring to become professional chemists should select courses 1, 2, 3, 51, 61 or 62, 71, and 90. The remainder of the possible forty hours in chemistry should be devoted to the subjects which will best fit each student for his chosen work.

Those desiring to teach should select not less than twenty-five hours, which should include courses 1, 2, 3, 53, 60, 61 or 62, and 80 or 81.

For business or general culture, or as a foundation for work in medicine, botany, zoölogy, geology, mineralogy, or physics, at least 1, 2 and 61 should be studied.

Students majoring in chemistry should have completed ten hours of physics, mathematics through calculus, and elementary courses in German, French, bacteriology, and geology.

The department will gladly confer with students majoring in chemistry and advise them as to choice of courses best adapted to individual needs.

FEES will be charged in the various courses to cover cost of materials, breakage, etc.

1.—**ELEMENTARY CHEMISTRY.** Five hours credit. First semester, 10 to 12 or 1 to 3; second semester, 10 to 12. Recitations, lectures, and laboratory work. Students presenting chemistry for admission to the College are not admitted to this course. Stratton and assistants.

2.—**INORGANIC CHEMISTRY.** Five hours credit. First semester. Lectures and recitations, M. W. F., 8 or 9. Laboratory, Tu. Th., 8 to 10 or 1 to 3. Prerequisite, course 1. Cady, Faragher, and assistants.

3.—**INORGANIC CHEMISTRY AND QUALITATIVE ANALYSIS.** Five hours credit. Second semester. Lectures and recitations, Tu. Th., 8 or 9. Laboratory, M. W. F., 8 to 10 or 1 to 3. Prerequisite, course 2. Cady, Faragher, and assistants.

4.—**ELEMENTARY ORGANIC AND SANITARY CHEMISTRY.** Five hours credit. First semester, 10 to 12. Designed for students preparing for home economics. Not a substitute for 61 or 62. Prerequisite, chemistry 1. Bailey.

51.—**QUANTITATIVE ANALYSIS I.** Two, three, or five hours credit. Both semesters, 10 to 12 or 1 to 3. A general course covering the fundamental principles of gravimetric and volumetric analyses. Prerequisite, course 3. Allen and assistants.

52.—**QUANTITATIVE ANALYSIS II.** Two, three, or five hours credit. Both semesters, 1 to 3, or by appointment. In connection with this work

* Absent on leave.

some specialty, such as cement, glass, or packing-house industry, rock analysis, paint analysis, etc., may be pursued. Prerequisite, course 51. Allen and assistants.

52A.—SANITARY WATER ANALYSIS. Three hours credit. Second semester, 10 to 12. Laboratory work in the sanitary analysis of water and sewage. Lectures and assigned readings on the interpretation of results and upon the methods used. Especially designed to fit students for commercial positions in this line of work. Prerequisite, course 51. Bruckmiller.

52C.—GAS ANALYSIS. Two hours credit. First semester, by appointment. A laboratory course of general gasometric methods, analysis of flue gases, artificial, and natural gases. Prerequisite, course 51. Allen.

52D.—FOOD ANALYSIS. Three hours credit. Both semesters, by appointment. Lectures and laboratory. Prerequisites, courses 51 and 61 or 62. Long.

52E.—OIL ANALYSIS. Two hours credit. First semester, by appointment. The examination of petroleum and their products, lubricating oils, asphalts, and road materials. Prerequisite, course 51. Allen.

52F.—IRON AND STEEL ANALYSIS. Two hours credit. Second semester, by appointment. Analysis of special steels and alloys. Prerequisite, course 51. Allen.

52G.—THE CHEMISTRY OF MILLING AND BAKING. Two hours credit. Second semester, by appointment. Designed to meet the requirements of chemists desiring to carry on control work in the milling industry. Prerequisites, courses 51 and 61 or 62. Long.

52H.—INDUSTRIAL ORGANIC ANALYSIS. Two hours credit. Second semester, by appointment. Including analyses of soap, paper, leather, starches, etc. Prerequisites, courses 51 and 61 or 62. Estes.

52I.—WET ASSAYING. Two hours credit. Second semester, by appointment. Volumetric methods for the estimation of copper, lead, zinc, manganese, iron, silver, gold, etc. Prerequisite, course 51. Allen.

53.—ASSAYING AND METALLURGICAL ANALYSIS. Three hours credit. Second semester, 3 to 5. The course will cover the fire assay of gold, silver, copper, and other metals. If a student has not taken course 52 he may profitably supplement the fire assaying with two hours' work on the volumetric assay of ore and furnace products. Whitaker, Estes.

60.—CHEMISTRY OF FOOD PRODUCTS. Five hours credit. Second semester, 3 to 5. This is intended as a general course for students who are interested in food supply, and includes a study of the source, composition, and use of foods. Attention is also given to the world's supply of foods and its manufacture and preparation for the market. Prerequisite, course 1. Bailey.

61.—ELEMENTARY ORGANIC CHEMISTRY. Five hours credit. Both semesters, 1 to 3. Designed to cover briefly the aliphatic and aromatic series, to discuss the more important derivatives, and to show their relationships and applications. Prerequisite, ten hours chemistry. Dains.

62.—ORGANIC CHEMISTRY I. Five hours credit. First semester, recitations, M. W. F., at 9. Laboratory, Tu. and Th. mornings or afternoons. For students who wish a more detailed knowledge of organic chemistry. In this course the aliphatic series only is discussed, the aromatic series being reserved for organic chemistry 63. Prerequisite, ten hours chemistry. Dains.

63.—ORGANIC CHEMISTRY II. Five hours credit. Second semester, recitations, M. W. F., at 9. Laboratory, Tu and Th. mornings or afternoons. Aromatic series. Prerequisite, course 62. Dains.

NOTE.—Not more than five hours from courses 52 and its options and 53 may be taken.

70.—PHYSICAL CHEMISTRY I. Five hours credit. First semester, at 10. A course paying special attention to electrochemistry. Lectures, recitations, and laboratory work. Prerequisite, course 3 and satisfactory preparation in general physics and calculus. Cady.

71.—PHYSICAL CHEMISTRY II. Five hours credit. Second semester, at 10. A general course in theoretical and physical chemistry. Lectures, recitations, and laboratory work. Prerequisites, courses 1, 2, 3, 51, 61 or 62, and satisfactory preparation in general physics and calculus. Cady.

80.—INORGANIC INDUSTRIAL CHEMISTRY. Three hours credit. Second semester, at 11. A study of the inorganic industries, including such topics as the manufacture of acids, alkalies and other chemicals, fertilizers, paint and pigments, glass and cement, and the purification of water. Prerequisites, courses 1, 2, and 3. Whitaker, Bruckmiller.

81.—ORGANIC INDUSTRIAL CHEMISTRY. Three hours credit. First semester, at 9. A study of the inorganic industries, including such topics as the refining of petroleum, the distillation of wood and coal, packing houses, fermentation, soaps, leather, paper, starches, sugars, dyestuffs, etc. Prerequisites, courses 1, 2, 3, and 61 or 62. Whitaker, Estes.

90.—METALLURGY I. Three hours credit. First semester, at 11. General metallurgy, the metallurgy of iron and steel. Prerequisite, course 3. Whitaker.

91.—METALLURGY II. Three hours credit. Second semester, at 9. The metallurgy of lead, zinc, and copper, followed by that of silver, gold, mercury, and tin. Prerequisite, course 3. Whitaker, Estes.

92.—METALLURGICAL LABORATORY. Two hours credit. First semester by appointment. This course includes high-temperature measurements, calorimetry, preparation of silicate and alloys, study of roasting, reduction, oxidation, amalgamation, chlorination, cyaniding, and leaching. Prerequisite, course 90 or 91. Estes.

93.—GENERAL METALLURGY. Two hours credit. First semester, at 11. Physical properties of metals and alloys, thermal analysis, pyrometry, refractories, slags, matte, bullion, typical metallurgical processes. Whitaker, Estes.

DESIGN.

Professor: GRIFFITH.
Assistant Professor: FRAZIER.
Instructor: BENSON.

EQUIPMENT. The department of design occupies six top-lighted studios on the third floor of the new Administration Building. They are well equipped with casts from the antique, books and plates upon the theory and history of ornamental design, printing presses, a potter's wheel, and easels. The classical museum and the museum of natural history offer an abundance of material for the use of students in design. Kilns are available for the firing of pottery, and the equipment of Fowler Shops for the work in wood and metal. A model poses for the life classes and the University campus offers an ideal sketching ground for the landscape painting classes.

ADVICE AS TO CHOICE OF COURSES. Technical students to whom some drawing is essential are advised to take course 1. Students wishing training in artistic perception and graphic expression for its general culture value should take course 1, followed by 2, or course 52.

1.—FREE-HAND DRAWING. Three hours credit. Both semesters, 1 to 3. Drawing with pencil and charcoal from the cast and objects of still life, including the principles of perspective and geometrical problems of mechanical drawing, which aims to teach the student to construct form in a simple and correct manner. Griffith, Frazer.

2.—DESIGN I. Three hours credit. Both semesters, 8 to 10. The anatomy of pattern and the planning of ornament. Prerequisite, course 1. Benson.

51.—FREE-HAND DRAWING. Three hours credit. A continuation of course 1, for students doing more advanced work. Prerequisite, course 1. Both semesters, 2 to 4. Griffith, Frazier.

52.—HISTORY OF PAINTING. Two hours credit. First semester, at 9. A lecture course presenting a survey of the whole field of painting, with the object of attaining the critical knowledge necessary to understand and enjoy a work of art. Griffith.

53.—HISTORY OF AMERICAN PAINTING. Two hours credit. Second semester, at 9. Griffith.

55.—DESIGN II. Three hours credit. Both semesters, at 10. The application of design. Prerequisite, course 2. Benson.

56.—APPLIED DESIGN I. One hour credit. One semester, five hours per week, by appointment. Must be preceded by courses 1 and 55. Benson.

57.—APPLIED DESIGN II. One hour credit. One semester, five hours per week, by appointment. A continuation of course 56. Benson.

58.—HISTORY OF DESIGN. Two hours credit. First semester, at 10. A lecture course upon the history of ornament. Griffith.

59.—ARTISTIC PHOTOGRAPHY. No credit. Second semester, at 10. A course upon the use of photography in artistic expression. Griffith.

ECONOMICS AND COMMERCE.

Professor: BOYNTON (Chairman of Department).

Assistant Professors: DUFFUS, ISE, SMITH, CATELL, FERGUSON.

Lecturer on Accounting: J. D. M. CROCKETT, C. P. A.

EQUIPMENT. Instruction in this department is conducted chiefly by lectures, and reading and investigation in the library, aided in the elementary courses by textbooks. The University library contains about 3,500 volumes relating to the courses of instruction, and a fair collection of special reports and documents for research work. All of the principal economic journals are on file in the reading rooms. In addition, there are charts, maps, and outlines. A limited amount of investigation of social and economic conditions is carried on.

ADVICE AS TO COURSES. Economics 1 is an essential foundation for and a prerequisite to all other courses in economics and commerce. Economics 2 and 3 lay a foundation for nearly all of the advanced courses and should be taken by all who expect to elect more than a few units in the department.

REQUIREMENTS FOR A MAJOR. The Elements of Economics (1 or 90), and the Economic and Financial History of the United States (3), are prescribed for all major students. Major students wishing a general course, or planning to take a graduate course, are advised, in fulfilling the requirements for graduation, to elect from the following fundamental courses: Money (50), Banking (51), History and Organization of Transportation (55), Railway Rates and Regulation (56), Corporations and Trusts (57), Public Finance (61 and 62), Statistics (68), Labor Problems (70), Economics of Agriculture (80), History of Economic Thought (91), and Distribution of Wealth (92). Those who wish to make special preparation for some vocation should elect studies in addition to those required of all major students in accordance with the suggestions made below.

SUGGESTED SPECIAL GROUPS. By a judicious combination of courses in the department of economics and commerce, and other departments of

the College and the technical schools of the University, those wishing to make special preparation for some vocation can secure the more important courses given in the separate schools of commerce of other institutions. Such students should elect courses more liberally in the department than those who wish only a general major, or plan to take a graduate course. They should, also, early in their College course, consult with the faculty of the department with reference to the election of work in other departments. Upon graduation, those who complete not less than 35 hours, including all italicized subjects in one of the special groups numbered II, III, IV, V, and VI, provided they display good ability and in other respects merit high commendation, receive a special certificate from the department.

I. *Training for Commercial Teaching.* In completing their major requirements those wishing to prepare for teaching commercial subjects in high schools should take *Commercial Geography* (4), *Business Organization and Management* (54), *Business Law* (69), *Money* (50), *Banking* (51), *Corporation and Trusts* (57), and *Accounting* (64 and 65). Teachers of commercial subjects are expected to know stenography and typewriting. These are not taught in the College, but a knowledge of them should be acquired.

II. *General Business Training.* Those who wish a general business course should take *Business Organization and Management* (54), *Money* (50), *Banking* (51), *Corporation and Trusts* (57), *Labor Problems* (70), *Insurance* (60), *Business Law* (69), and *Accounting* (64 and 65). They should also elect advertising (journalism 55 and 56), and in meeting their group requirements, should elect psychology, logic, and more than one course in English composition.

III. *Training for Banking.* Those who plan to prepare for banking should take *Money* (50), *Banking* (51), *Practice Banking* (52), *Investments* (53), *Corporations and Trusts* (57), *Business Law* (69), and *Accounting* (64 and 65).

IV. *Training for Railway Administration.* Those who expect to enter the field of railway transportation should take *Business Organization and Management* (54), *History of Transportation* (55), *Railway Rates* (56), *Corporations and Trusts* (57), *Statistics* (68), *Business Law* (69), *Markets and Marketing* (81), and *Accounting* (64, 65 and 66); they are advised to elect courses in civil or mechanical engineering also.

V. *Training for Commerce.* Those who expect to engage in mercantile pursuits should take *Commercial Geography* (4), *Markets and Marketing* (81), *Money* (50), *Railway Rates* (56), *Business Law* (69), *Business Organization and Management* (54), *Corporations and Trusts* (57), and *Accounting* (64 and 65). They are advised to elect advertising (journalism 55 and 56) and psychology 1.

VI. *Training for Accounting.* Those who expect to enter the practice of accounting should take *Accounting* (64, 65, 66 and 67), *Statistics* (68), *Business Organization and Management* (54), *Corporations and Trusts* (57), and *Business Law* (69).

VII. *Training for Public Service.* Those preparing for public service should take *Statistics* (68), *Public Finance* (61 and 62), *Labor Problems* (70), *Public Utilities* (59), and *Corporations and Trusts* (57). They should elect liberally in sociology and political science.

VIII. *Training for Social Service.* Those who plan to engage in some branch of social service should take *Statistics* (68), *Labor Problems* (70), *Labor Legislation* (71), *Immigration* (72), and *Distribution of Wealth* (92), and should elect several courses in sociology and political science.

IX. *Economics as Preliminary to the Study of Law.* Many of the courses in economics and commerce will be found to be valuable in preparing for the study of law. Major students who expect to enter the legal profession should take *Corporations and Trusts* (57), *Public Utili-*

ties (59), Public Finance (61), Money (50), Banking (51), Investments (53), and Labor Problems (70).

1.—ELEMENTS OF ECONOMICS. Five hours credit. Both semesters, at 8, 9, 10, 11, 1, and 2. This course is essentially a concrete analytical study of the laws governing man in his relation to wealth. It not only furnishes the basis for the scientific understanding of economic affairs, but serves as the foundation for all other courses in economics. Not open to Juniors and Seniors. (See 90.)

Duffus, Ise, Smith, Catell, Ferguson.

2.—ECONOMIC HISTORY OF ENGLAND. Three hours credit. First semester, at 9. A study of the general development of agriculture, industry, and commerce in England from the tenth century to the present time. The course is designed to show the gradual evolution of an industrial society and to trace those changes by which modern England has attained her present economic position. Prerequisite, course 1.

Boynton.

3.—ECONOMIC AND FINANCIAL HISTORY OF THE UNITED STATES. Three hours credit. Second Semester, at 9. Attention is given to colonial agriculture, industry, and trade as an introduction to the course. After 1789, the main lines of study are the banking, transportation, and tariff history of the United States, with special attention to the development of the natural resources, the rise of manufactures, and the expansion of corporate methods in industry and trade. Prerequisite, course 1.

Boynton.

4.—COMMERCIAL GEOGRAPHY. Three hours credit. Second semester, at 10. The purpose of this course is to acquaint the student with the more important economic aspects of the principal industries of the world. The course is primarily a concrete, descriptive study of the geographical division of labor and the differences in natural resources, labor conditions, available capital and business enterprise which largely determine this division. The chief products of the different countries and international trade in them are studied. Prerequisite, course 1.

Duffus.

5.—EUROPEAN INDUSTRY AND COMMERCE DURING THE NINETEENTH CENTURY I. Two hours credit. First semester, at 9. Agrarian, industrial, and commercial development of Europe in the nineteenth century. The agrarian movement and depression, the industrial revolution, the development of commerce and shipping, a brief consideration of shipping subsidies, industrial combinations and state policies regarding them, and tariff policies of the chief European countries. Not open to Freshmen. Prerequisite, course 1.

Ise.

6.—EUROPEAN INDUSTRY AND COMMERCE DURING THE NINETEENTH CENTURY II. Two hours credit. Second semester, at 9. A continuation of course 5, which must have been completed.

Ise.

50.—MONEY. Three hours credit. First semester, at 10. The evolution of coinage and of monetary systems; the production, distribution and functions of the precious metals; value theories of money; issues of paper money by governments and by banks; credit and its relation to money; domestic and foreign exchange; prices and their fluctuations constitute the main features of the course. The historical background, where possible, is emphasized. Prerequisite, course 1.

Boynton.

51.—BANKING. Three hours credit. Second semester, at 10. The principles of banking are studied, special attention being given to the relation of banking to credit operations. A comparative study is made of the banking systems of the United States, Great Britain, France, Germany, and of Canada, including their historical development. Special consideration is given to the Federal Reserve System of the United States. Prerequisite, course 50.

Boynton.

52.—BANKING PRACTICE. Two hours credit. First semester, at 10. A study of the organization and operation of commercial banks, savings banks, trust companies, and investment banking, including the function of commercial paper houses and note brokers. The nature of banking and mercantile credit is analyzed as well as the broader relation of banking to the money market. Prerequisite, course 51.

Boynton.

53.—INVESTMENTS. Two hours credit. Second semester, at 10. A study of the various fields of investments, including railway, mining, and industrial securities, and the bonds of governments and municipalities, with special attention to the merits of particular stocks, bonds, mortgages, etc. The work of investment banking houses will likewise be considered. The aim of the course is to determine, so far as possible, the elements of a wise and conservative investment. Prerequisite, course 1.

Boynton.

54.—BUSINESS ORGANIZATION AND MANAGEMENT. Three hours credit. First semester, at 1. This course treats of general business organization and management, as well as the organization of the business of the bank, the factory, and the general office. The organization and working of the industrial and commercial corporation are given special consideration. Prerequisite, course 1.

55.—HISTORY AND ORGANIZATION OF TRANSPORTATION. Two hours credit. First semester, at 11. Canal construction and the development of the railway net of the United States; railroad finance and organization; problems of railway maintenance and methods of conducting transportation; accounts and reports illustrating railway operations; a comparative study of railway practices in other countries. Prerequisite course 1. Should be preceded by course 3.

Boynton.

56.—RAILWAY RATES AND REGULATION. Two hours credit. Second semester, at 11. A study of the theory of railway rates, and of rate-making in practice; problems of local and personal discrimination; adjustments due to geographical location and market competition; railway agreements; state railway commissions and the Interstate Commerce Commission; recent legislation, state and national, relating to railway transportation. Prerequisite, course 55.

Boynton.

57.—CORPORATIONS AND TRUSTS. Three hours credit. Second semester, at 9. A general course dealing mainly with the financial side of large corporations, and concluding with a study of the economic causes and consequences of the combination movement in industry. The leading topics treated are: internal organization, promotion, capitalization, financing, and reorganization of corporations; and the origin, development and legal status of trusts. Consideration is given throughout to interrelated corporation and trust problems. Prerequisite, course 1.

Ferguson.

59.—PUBLIC UTILITIES. Two hours credit. Second semester, at 9. The topics studied are: problems of water, lighting, heating, and telephone service; street and interurban railway transportation; public ownership versus regulated private ownership; the determination of reasonable rates and adequate service; public utility reports and accounts. Prerequisite, course 1.

Duffus.

60.—INSURANCE. Three hours credit. Second semester, at 8. A study of (a) the general economic nature of risk and the theory of insurance; (b) the organized business of fire and life insurance, including details with respect to policy contracts, fire insurance rating, the calculation of insurance premiums, reserves, investment of funds, etc.; and (c) the relation of the state to insurance. Prerequisite, course 1.

Smith.

61.—PUBLIC FINANCE I. *Principles*. Three hours credit. First semester, at 8. A general introduction to the science of finance. Attention

is given chiefly to the various kinds of public revenues, to general theories and principles of taxation, and to the justice and incidence of taxation. Prerequisite, course 1. Smith.

62.—PUBLIC FINANCE II. *Practice*. Three hours credit. Second semester at 8. Application of general principles of public finance to a consideration of actual systems of taxation, with special reference to practical American problems. Public expenditures and public debts are dealt with at some length. The course concludes with a study of the fiscal organization of the state and of budgets, national, state and local. Prerequisite, course 61. Smith.

64.—ACCOUNTING I. Three hours credit. First semester, at 2. Theory and practice of modern accounting, applicable to the single proprietorship and the partnership form of business. Prerequisite, course 1. Catell.

65.—ACCOUNTING II. Three hours credit. Second semester, at 2. Prerequisite, course 64. Review and further development of Accounting I. Special problems in connection with partnerships, interest, and depreciation. Corporation accounts, stock issues, dividends, sinking funds and reserves. Catell.

66.—COST ACCOUNTING. Two hours credit. First semester at 2. Prerequisite, courses 64 and 65. The elements of cost. Cost records an integral part of the general accounting system. The control of material. Different wage systems. The allocation of expenditures to various units of production in different lines of industry. Catell.

67.—ADVANCED ACCOUNTING AND AUDITING. Two hours credit. Second semester at 2. Prerequisite, courses 64 and 65. C. P. A. problems. Duties and responsibilities of the auditor. General procedure and method. Balance sheet audit, detailed audit, verification of assets and liabilities. Catell.

68.—STATISTICS. Three hours credit. Second semester, at 9. Statistical averages. Graphic representation. Deviation. Correlation. Application of statistical methods to the study of prices, population, wages, and general business facts. Prerequisite, course 1. Catell.

69.—BUSINESS LAW. Three hours credit. Second semester at 11. The elementary principles of law relating to business transactions. The essentials of contracts, agency, bailments, sales, negotiable instruments, corporations and real property. Emphasis is laid upon the legal problems which arise in everyday business. Prerequisite, course 1. Ferguson.

70.—LABOR PROBLEMS. Two hours credit. First semester, at 8. A study, in the main, of the growth, organization, and policies of labor organizations, with special reference to the United States. Other topics considered are profit-sharing, coöperation, arbitration and conciliation, proposed solutions of the labor problem, and the future of labor in the United States. Prerequisite, course 1. Ferguson.

71.—LABOR LEGISLATION. Two hours credit. Second semester, at 8. A continuation of course 70, and dealing with compulsory arbitration, hours of labor, the minimum wage, workmen's compensation acts, safety legislation, health insurance, old-age pensions, unemployment, and questions of administration. Emphasis is laid throughout upon American conditions and problems. Prerequisite, course 70. Ferguson.

72.—IMMIGRATION PROBLEMS. Two hours credit. Second semester, at 10. The course is concerned with the history of immigration to the United States, its causes, character, geographical distribution, economic effects of immigration, pauperism, and the problem of assimilation. The special problems of oriental immigration and the question of immigration policy will also be studied. Prerequisite, course 1.

72.—MODERN ECONOMIC REFORM. Three hours credit. Second semester, at 10. This course will treat of modern movements for economic

reform, including the single tax, agrarian reform, coöperation, profit-sharing, syndicalism, socialism and communism, with a critical discussion of present and proposed methods of distribution and economic organization. Prerequisite, course 1. Boynton.

80.—ECONOMICS OF AGRICULTURE. Three hours credit. Second semester, at 1. The principal topics studied are: private property in land; the public-land policy of the United States and its economic consequences; organization of the productive factors; size of farms, land values, and tenancy; rural credit; marketing; coöperative organization among farmers. Special attention is given to conditions in Kansas. Prerequisite, course 1. Ise.

81.—MARKETS AND MARKETING. Three hours credit. First semester, at 11. Summarized history of marketing organization; principal types of present-day markets and marketing agencies; the functions of the middleman in the distribution of the products of farm and factory; organized speculation in farm products; the organization of domestic and foreign trade; various proposals for improving marketing methods. Prerequisite, course 1. Duffus.

90.—ELEMENTS OF ECONOMICS. Three hours credit. First semester, at 1. The same as course 1, except that it is designed especially to meet the needs of Juniors and Seniors. Ise.

91.—HISTORY OF ECONOMIC THOUGHT. Two hours credit. First semester, at 9. The history of economic doctrines in ancient, mediæval and modern times. A study of the doctrines of the Greeks, Romans, schoolmen and canonists, mercantilists, physiocrats, and of the later classical, mathematical, Austrian and historical schools. Prerequisite, course 1 or 90. Ise.

92.—THE DISTRIBUTION OF WEALTH. Three hours credit. Second semester, at 9. This course is designed to give mature students of economics a firm grasp of the more important economic principles. The theories of value and prices and of distribution are studied in the light of current schools of thought. Prerequisite, course 1 or 90. Ise.

EDUCATION.

The following courses in the School of Education are open to College students who do not elect courses from other professional schools, but not more than fifteen hours and a course in senior teaching may be counted towards the degree of bachelor of arts. Students desiring admission to any of these courses must register in the School of Education as well as the College, and will be admitted to the classes as students of the School of Education.

Courses in education, of which detailed descriptions will be found in Section IX, are arranged in the following four groups. College students may not offer more than seven hours in any one group:

Historical group: numbers 50, 51, 59, 60, and 63.

Theoretical group: numbers 1, 54, 55, 64, 65, 67, 68, 69, 71, 75, 78, and 79.

Administrative group: numbers 2, 52, 53, 56, 57, 58, 61, 62, 66, 70, 72, 73, 74, and 77.

Teachers' Courses: numbers 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 91, 95, 97, and 99.

Senior Teaching: numbers 80a, 81a, 82a, 83a, 84a, 85a, 86a, 87a, 88a, 89a, 91a, 92a, 92b, 94a, 95a, 96a, 96b, 97a, 98a, 99a.

ENGINEERING.

The following courses in the School of Engineering are open to College students who do not elect courses from other professional schools, but not more than fifteen hours may be counted towards the degree of bachelor of arts. Students desiring admission to any of these courses must register in the School of Engineering as well as in the College, and will be admitted to the classes as engineering students:

C. E. 1.—SURVEYING. Three hours credit. First semester, Tu. Th., at 10 to 11, with field work at 1 to 4. Prerequisite, plane trigonometry.

C. E. 2. SURVEYING. Three hours credit. Second semester. A continuation of the preceding course.

ENG. DR. 3.—DESCRIPTIVE GEOMETRY. Three hours credit. Both semesters.

C. E. 52.—CITY PLANNING. Two hours credit. Second semester.

C. E. 70.—SANITARY ENGINEERING I. Three hours credit. First semester.

C. E. 71.—SANITARY ENGINEERING II. Four hours credit. Second semester.

C. E. 73.—SANITARY SCIENCE AND PUBLIC HEALTH. Two hours credit. First semester.

C. E. 75.—ROADS AND PAVEMENTS. Two hours credit. Second semester.

E. E. 50.—DYNAMO MACHINERY. Three hours credit. First semester.

E. E. 51.—THEORY OF ALTERNATING CURRENTS. Five hours credit. Second semester.

M. E. 51.—THERMODYNAMICS. Three hours credit. First semester.

M. E. 60.—SHOP METHODS. One and one-half hours credit. Second semester.

ENG. 51.—MANUFACTURING. Two hours credit. First semester.

ENG. 52.—INDUSTRIAL ADMINISTRATION. Three hours credit. Second semester.

MECH. 50.—MECHANICS. Five hours credit. Both semesters.

MECH. 51.—STRENGTH OF MATERIALS. Five hours credit. Both semesters.

MECH. 55.—HYDRAULICS. Three hours credit. Both semesters.

A. E. 5.—HISTORY OF ARCHITECTURE I. Three hours credit. First semester.

A. E. 6.—HISTORY OF ARCHITECTURE II. Three hours credit. Second semester.

MIN. E. 53.—ORE DRESSING. Three hours credit. Both semesters.

MIN. E. 68.—ELEMENTS OF MINING. Three hours credit. Both semesters.

ENGLISH LANGUAGE AND LITERATURE.

Professors: DUNLAP (Head of Department), HOPKINS, O'LEARY.

Associate Professors: WHITCOMB, SISSON, JOHNSON, LYNN.

Assistant Professors: GARDNER, BURNHAM, MORGAN.

Instructors: WINSTON, BROWN, LAIRD, HOOPES, SWENSON.

EQUIPMENT. Apart from a number of portraits and historical maps, the equipment for this department is the University Library, in which are collections of volumes and periodicals relating especially to rhetoric and composition, to English literature, and to the English language. There are complete sets of journals, such as *Anglia* and *Englishe*

Studien, and the publications of the Early English Text Society, the Chaucer Society, the English and American Dialect Societies, the Spenser Society, the Shakspeare Society, the New Shakspeare Society, the Shelley Society, the Browning Society, and others. The library also possesses the Shakspeare Jahrbuch, and facsimiles of the quartos and folios of Shakspeare. The total number of volumes pertaining to the subjects in this department is 13,224. Of these 1,257 are devoted to Shakspeare, 8,200 to other English literature, 757 to English philology, and 3,010 to American literature.

Prerequisites: Courses 1, 2, 10, and 11, or their equivalents, must be completed before the student can be admitted to any other English courses whatever; and courses 12-14 or 13-15, scheduled for the Sophomore year, or their equivalent, are prerequisite to all succeeding courses in English literature. In special cases students may be allowed, with the consent of the department, to take courses 12-14 or 13-15 in connection with an advanced course.

RHETORIC AND COMPOSITION.

1.—**RHETORIC I.**** Three hours credit. First semester, at 8, 9, 10, 11, 1, 2, 3. Written exercises, with study of language usage. Required of all Freshmen in the College not offering for entrance a fourth unit in English composition. Gardner and assistants.

2.—**RHETORIC II.**** Two hours credit. Second semester, at 8, 9, 10, 11, 1, 2, 3. A continuation of course 1. Required of all Freshmen in the College not offering for entrance a fourth unit in English composition. Gardner and assistants.

Credit for courses 1 and 2 is given provisionally and will be withdrawn for subsequent use of notably bad English.

3.—**THE PRINCIPLES OF ARGUMENTATION.*** Three hours credit. Second semester, at 10. The general principles of logic as applied in discourse, with briefs and exercises. Hopkins, Laird.

50.—**NARRATION AND DESCRIPTION.** Three hours credit. First semester, at 8, 9, 10. A study of general principles, with exercises. A fundamental course, recommended as preparation for English 55 to 58, inclusive. O'Leary, Lynn, Morgan.

51.—**NARRATION AND DESCRIPTION.** Two hours credit. Second semester, at 8 and 9. Prerequisite, course 50. O'Leary, Lynn, Gardner, Morgan.

52.—**EXPOSITION.** Two hours credit. First semester, at 9. A study of general principles, with outlines and exercises. A fundamental course recommended as preparation for English 55 to 58, inclusive. Gardner.

53.—**ADVANCED ARGUMENT.** Three hours credit. Second semester, at 2. Prerequisite, course 3. Hopkins.

55.—**LITERARY CRITICISM.** Two hours credit. First semester, at 1. A study of the principles and methods of criticism through its literature, with practice in book reviewing and in critical writing. Hopkins.

56.—**VERSIFICATION.** One hour credit. First semester, Monday, at 3. A study of the forms and principles of English verse, with exercises. Hopkins.

57.—**ESSAY WRITING.** Two hours credit. Second semester, at 10. A study of general principles, with exercises. O'Leary.

58.—**PROSE INVENTION.** Two hours credit. Second semester, at 1. A general survey of theories of literary art, with practice in original production. Library and conference course, with required thesis. Prerequisites, one or more advanced courses in English composition. Hopkins.

LANGUAGE.

60.—ELEMENTARY OLD ENGLISH. Three hours credit. Both semesters at 3. Old English grammar, with reading of West Saxon prose texts. Burnham.

61.—BEOWULF. Two hours credit. Second semester, at 3. Prerequisite, course 60. Burnham.

62.—MIDDLE ENGLISH. Two hours credit. First semester, at 2. Language and literature of the fourteenth century, exclusive of Chaucer. Prerequisite, course 60. Burnham.

63.—MIDDLE ENGLISH. Three hours credit. Second semester, at 1. Reading of Middle English texts, with study of the development of the English language, its sounds, inflections, and syntax. Prerequisite, course 60. Burnham.

68.—MODERN ENGLISH GRAMMAR. Two hours credit. First semester, at 1. A course chiefly practical, for intending teachers. Open only to qualified applicants after consultation with the instructor. Burnham.

70.—ENGLISH USAGE. Two hours credit. Second semester, at 2. Consideration of the principles governing usage, and of specific problems in contemporary English. Prerequisite, course 68. Burnham.

LITERATURE.

10.—ENGLISH LITERATURE. Two hours credit. First semester at 8, 9, 10, 11, 1, 2. A study of representative authors. Open to all students of the College not offering English literature as a fourth unit of entrance English. Prerequisite for all other courses in English above 11, except in the case of students who offer for entrance a fourth unit in English literature. Johnson and assistants.

11.—ENGLISH LITERATURE. Three hours credit. Second semester, 8, 9, 10, 11, 1, 2. A study of representative authors. Prerequisite for all later courses in English, except in the case of students who offer for entrance a fourth unit in English literature. Johnson and assistants.

12 and 13.—HISTORY OF ENGLISH LITERATURE.* 12, three hours credit; 13, two hours credit. The two courses begin at the same point. First semester, at 8, 9, 10, 11. Prerequisite, English 1, 2, 10, and 11. Lynn and assistants.

14 and 15.—HISTORY OF ENGLISH LITERATURE.* 14, two hours credit; 15, three hours credit. Second semester, at 8, 9, 10, 11. Prerequisites, English 1, 2, 10, and 11. Course 14 is a continuation of course 12, and course 15 of course 13. Lynn and assistants.

71.—AMERICAN LITERATURE I. Three hours credit. First semester, at 1. General history, with special reference to the work of the chief American poets. Hopkins.

72.—AMERICAN LITERATURE II. Three hours credit. Second semester, at 1. A study of later writers and of current literature, with special reference to fiction. Hopkins.

73.—ENGLISH LITERATURE OF THE EIGHTEENTH CENTURY. Two hours credit. First semester, at 9. The period covered is that from 1660 to approximately 1735. O'Leary.

74.—ENGLISH LITERATURE OF THE EIGHTEENTH CENTURY. Three hours credit. Second semester, at 9. Covers the period from approximately 1735 to 1798. O'Leary.

75.—VICTORIAN LITERATURE. Exclusive of the novel and Tennyson and Browning. Two hours credit. First semester, at 10. Dunlap.

76.—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Three hours credit. First semester, at 11. Prose, exclusive of the novel. The authors

studied are Lamb, De Quincey, Hazlitt, Newman, Landor, Ruskin, and Stevenson. Dunlap.

77.—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Three hours credit. Second semester, at 9. Poetry. The authors studied are Wordsworth, Coleridge, Southey, Byron, Arnold, Tennyson, and Browning. Dunlap.

78.—SHAKSPERE. Three hours credit. Both semesters, at 10. Interpretation of three plays. Dunlap.

79.—CHAUCER. Three hours credit. First semester, at 9. Neither Old nor Middle English required for entrance. Careful reading of the Prologue, Knightes Tale, and the Nonne Preestes Tale; rapid reading of a large part of the Canterbury Tales. Dunlap.

80.—SHELLEY AND KEATS. Two hours credit. Second semester, at 11. Lectures, and interpretation of selected poems. Dunlap.

81.—BROWNING AND TENNYSON. Two hours credit. Second semester, at 8. Interpretative study of selected poems, with general view of the work of both authors. Lynn.

82.—CARLYLE AND EMERSON. Two hours credit. Second semester, at 9. The characteristics of each man's work and its relation to nineteenth century thought. Lectures and class reports. (Given in 1918 and each alternate year following.) Johnson.

83.—MILTON AND HIS CONTEMPORARIES. Two hours credit. Second semester, at 9. The poetry and prose of Milton with supplementary study of representative contemporary authors. (Given in 1919 and each alternate year following.) Johnson.

84.—THE MODERN ENGLISH LYRIC. Two hours credit. First semester, at 3. A representative body of English lyrics will be studied in the classroom, with attention to the general criticism of lyric poetry. Whitcomb.

85.—TECHNIC AND THEORY OF THE DRAMA. Two hours credit. First semester, at 2. Study of dramatic dialogue, diction, characterization, and stage presentation. Lectures and weekly exercises in criticism or composition. Whitcomb.

86.—HISTORY OF THE ENGLISH DRAMA. Three hours credit. First semester, at 8. From the early liturgical plays to 1642. Study of origins and influences; the growth of types; stage history; and reading and criticism of about thirty plays. Lectures and written reports. Johnson.

87.—HISTORY OF THE ENGLISH DRAMA. Three hours credit. Second semester, at 2. English dramatic history from 1642 to the present time, with special attention given to Victorian and post-Victorian drama. Whitcomb.

88.—THE ENGLISH NOVEL. Three hours credit. Second semester, at 11. A historical and critical survey of the English novel, from Defoe to Meredith. Lectures on the growth and development of the novel. Study of selected typical novels, illustrative of important phases of fiction. Dunlap.

89.—THE ENGLISH ESSAY. Two hours credit. Second semester, at 9. A study, historical and critical, of the essay as a literary form, from Bacon to the present time. O'Leary.

91.—BIOGRAPHY AND AUTOBIOGRAPHY. Two hours credit. First semester, at 1. A study of the values and problems of the individual life, as suggested by the detailed records of significant lives. Whitcomb.

ENTOMOLOGY.

Professor: HUNTER (Head of Department).

Associate Professor: HUNGERFORD.

Instructor: LAWSON.

Research Assistant: HOSFORD.

EQUIPMENT. The arrangement of the laboratories is such as to provide for (1) general instruction: (2) research work in serial-breeding experiments and conditions governing development. Special thermal regulators for determination of influence of temperature on development are used in these researches. A feature of great value is the recent completion of the cross-reference card index to the current entomological literature. An insectary with greenhouse adjoining has, in addition to regular insectary equipment, special facilities for the study of aquatic life. The extensive collections, both biologic and systematic, offer exceptional facilities for comprehensive instruction in the various groups. A more extended notice of these collections will be found under the head of Museums. A large series of cabinets has been especially arranged to aid in teaching. These are supplemented by models illustrating developmental processes.

ADVICE AS TO CHOICE OF COURSES. The courses in entomology are designed to meet the needs of three classes of students: (1) The general student who desires a fuller knowledge and appreciation of the biological problems illustrated by insect life; (2) the student who is preparing to teach botany, zoology or general biology in the high school; (3) and the special student who is preparing to become a teacher or investigator. For the first class, courses 1, 2, 3, and 53 are recommended; for the second class in addition to these, courses 51, 58, and 60. For the third class, after the completion of the four fundamental courses, the aims of each student will largely determine the selection of advanced courses. Students majoring in the department are recommended to take after course 58, Protozoölogy 71. The advice of the department is that such selection shall be made only after consultation.

1.—**INTRODUCTORY ENTOMOLOGY I.** Five hours credit. Both semesters, two sections, 9 and 10. A general course in life and behavior of insects and other arthropods, and their relations to plants and other animals. A field, laboratory and lecture course with recitations designed for the general student. Fee, \$1. Hungerford and assistants.

2.—**INTRODUCTORY ENTOMOLOGY II.** Five hours credit. Second semester, 9 to 10, M. W. F.; 8 to 10, Tu. Th. This course is a continuation of Entomology I, and during the present period special emphasis will be given to those forms and problems which have a direct bearing on food conservation. Prerequisite, course 1. Hungerford.

3.—**MORPHOLOGY OF INSECTS I.*** Three hours credit. First semester, 10 to 12. A course presenting the more general features of the form and structure of a few representative insects. Laboratory study, lectures, and assigned readings. Prerequisite, course 1 or equivalent. Fee, \$1.50. Lawson.

50.—**INTRODUCTORY ENTOMOLOGY.** Five hours credit. First semester, at 1 to 2. A general course in life and behavior of insects and other arthropods, and their relations to plants and other animals. A field, laboratory, and lecture course with recitations. Not open to students who have had course 1. Fee, \$1. Hungerford.

51.—**MORPHOLOGY OF INSECTS II.** Three hours credit. Second semester, 10 to 12. A study of the internal structure and development of a few representative types of insects, and their bearing upon physiological processes of life. Prerequisites, entomology, 1 and 2, or equivalent. Fees, \$1.50.

52.—**SYSTEMATIC ENTOMOLOGY.** Two hours credit. Both semesters, 2 to 4. This course gives special prominence to the systematic position

of the orders studied. The laboratory work consists of the classification of insects, and is accompanied by studies in the life history of the various forms identified. Prerequisite, entomology 1, 2, and 3, or equivalent. Fee, \$1.

Lawson.

53.—BIOLOGY OF THE ARTHROPODA. Two hours credit. First semester, 3. This course, conducted in field and laboratory, deals with ecology, adaptation to environment, mode of life, and such other general biological studies as illustrated in the lives of insects and other arthropods. Prerequisites, course 1 and 2, or equivalent. Fee, \$1. Hungerford.

54.—ADVANCED MORPHOLOGY AND HISTOLOGY OF INSECTS. Three hours credit. Both semesters, 1 to 3. Prerequisites, courses 1, 2, and 51. Fee, \$1.50. Hunter.

55.—TAXONOMY OF INSECTS. Three hours credit. Both semesters, by appointment. A continuation of course 53, enabling the student to undertake the serious study of some one family. Students qualified to take this course are afforded an opportunity to work with the material secured on the biological survey trip of the previous summer. (Special study of the Coccidæ may be elected in this course.) Prerequisite, entomology 1, 2 and 3. Fee, \$1. Hungerford.

56.—APPLIED ENTOMOLOGY I. Two hours credit. First semester, at 11. Lectures, recitations, and observations in the field on forms of economic value; life histories, habits, and methods of combating the injurious forms, and of utilizing the beneficial. Prerequisite, course 1 and 2 or equivalent. Fee, \$1. Hungerford.

57.—APPLIED ENTOMOLOGY II. Two hours credit. Second semester, at 11. A continuation of course 56. This course deals especially with those insects that are intimately associated with the household, the garden, and the farmyard. Course 56, which deals with the insects of farm and orchard crops, is not a prerequisite for this course, which is nontechnical, and is intended for the general student. Hungerford.

58.—INSECTS AND PUBLIC HEALTH. Two hours credit. First semester, at 10. A study of the relations of insects and other arthropods to public health. A lecture, recitation, and demonstration course for the purpose of acquainting the student with those forms which are liable to transmit human diseases. Hunter.

60.—AGRICULTURE. Two hours credit. First semester, at 8. This course deals with insects injurious to crops. This course should be taken in combination with botany 60. Hungerford.

61.—FIELD ENTOMOLOGY AND INSECTARY METHODS. Two hours credit, 3 to 5. First semester. This course is conducted in field and insectary, and involves a study of methods of collecting and of rearing insects. It is intended to serve two purposes; first, to give those intending to teach biology some knowledge of the handling of the material most available for their work; and second, to afford some training to those who purpose to carry on experiment-station work. Prerequisite, Entomology 1 and 2, and one course in applied entomology, or its equivalent. Fee, \$1. Hungerford.

GEOLOGY.

Professor: HAWORTH (Head of Department).

Assistant Professors: TODD, MOORE, HAYNES.

GENERAL STATEMENT. The department of geology offers training in a number of divisions of earth science, which, while more or less closely related to one another, are nevertheless to a certain extent independent sciences. These may be indicated conveniently as follows: (1) General geology and geography, (2) historical geology and paleontology, (3) economic geology, and (4) mineralogy and petrology. Courses in the department may be grouped with reference to the following classes of

students: (a) those wishing to acquire knowledge of the structure, composition and history of the earth, as a part of a liberal education; (b) those expecting to engage in professional work along some geologic line, (1) as a petroleum geologist, or (2) in geology applied to mining; (c) those desiring to prepare for teaching in secondary schools; and (d) those who feel the need of geologic knowledge as an aid to the interpretation of facts of other sciences or branches of learning.

ADVICE AS TO COURSES. It is desirable that every student decide, at least before his Junior year, the particular field of geology in which he wishes to specialize. Students who desire to follow any of the lines of training previously mentioned may be guided by the following outlines:

a.—*General Geology*: 1, 2 (or 2a) and 2b, 30, 50, 51, 61, 62, 71 or 72.

b (1).—*Petroleum Geology*: 1, 2 (or 2a) and 2b, 30, 50, 51, 61, 62, 71, 73.

b (2).—*Mining Geology*: 1, 2 (or 2a) and 2b, 30, 31, 51, 61, 70, 71, 72, 81, 82.

c.—*Teaching in Secondary Schools*: 1, 2 (or 2a) and 2b, 30, 50, 51, 54, 55, 56, 57, 58, 59, 70.

d.—*Geology as a minor*: 1, 2 (or 2a) and 2b. Additional courses related to the major subject.

EQUIPMENT. The department of geology is located in Haworth Hall, a three-story building with laboratories, museums, lecture rooms, and library. The laboratories contain abundant material for class work in the study of minerals, rocks, and topographic and geologic maps. A very extensive collection of minerals and rocks arranged in systematic order, and a large collection of invertebrate fossils, are exhibited in the department museum. In the class rooms are cases with topographic and geologic wall maps, and models of topographic forms, together with a reflectoscope and lantern slides and reference collections of rocks, minerals, and fossils. The library contains all the principal works on geology and mining, including their various subdivisions, sets of federal, state and foreign geologic reports, and American and foreign geologic periodicals.

PREREQUISITES. Courses in geology Nos. 1, 2 (or 2a) and 2b, are prerequisite for all subsequent geology courses in the College excepting 30, 31, and 70. Students wishing to specialize in mineralogy, petrology and economic geology should take as much chemistry as their courses will permit; students wishing to specialize in historical geology and paleontology should take special work in zoology. Elementary chemistry and physics are required of all major students in geology. Group requirements for Freshman-Sophomores may be satisfied by geology courses 1, 2 (or 2a) and 2b,* or 1 and 30.

GENERAL GEOLOGY AND GEOGRAPHY.

1.—*PHYSICAL GEOGRAPHY*. Three hours credit. Each semester, at 9 or 11. An elementary course on the physical features of the earth, including a consideration of their origin and the agencies producing changes; the evolution of land forms. Occasional short field trips will be made. Moore, Haynes.

2 (or 2a).—*ELEMENTARY GEOLOGY*. Three hours credit. Each semester, at 8 or 10. A study of the elements of the science, including a general outline of geologic principles and agencies. An acquaintance with elementary chemistry is very desirable in this course. Prerequisite, geology 1. This course must be accompanied by 2b. Moore, Haynes.

2b.*—*INTRODUCTORY HISTORICAL GEOLOGY*. Two hours credit. Each semester, at 8 or 10. A study of the more important events in the past history of the earth, as a basis for the correct understanding of the present geography, rock structure, and natural resources of the world. Prerequisite, geology 1. This course must be accompanied by 2 (or 2a). Moore.

50.—GEOLOGIC PROCESSES. Three hours credit. First semester, at 11. An advanced course comprising a critical investigation of geologic agencies and the results of their work. The development of land forms and the principles of sedimentation will be studied, and the physiographic history of specific areas considered. Library and laboratory study, with special opportunity for training in the methods of geologic work. Prerequisites, geology 2 (or 2a) and 2b, and elementary physics and chemistry. Moore, Haynes.

51.—GEOLOGIC AND TOPOGRAPHIC MAPS. Two hours credit. First semester at 11. A study chiefly in the laboratory, designed to give the student a thorough understanding of geologic and topographic maps and the ability to interpret them correctly, a very important part of the training of a geologist. Prerequisites, geology 2 (or 2a) and 2b. Moore, Haynes.

52.—FIELD GEOLOGY. Six hours credit. Summer session. Open to men only. A five week's course devoted to a study of the geology and physiography of parts of Kansas and Colorado, with detailed investigation of special areas. Prerequisite, geology 2 (or 2a) and 2b. Registration only after consultation with the instructors. Moore, Haynes.

53.—FIELD GEOLOGY REPORT. An additional credit of three hours will be given for a satisfactory thesis based upon the work of course 52.

54.—ELEMENTS OF GEOGRAPHY. Three hours credit. Second semester, at 8. An introductory study of the earth with special reference to the relation of its physical features to life, especially to human life. The response of life to environment is investigated by study of the chief natural regions of earth. Prerequisites, geology 2 (or 2a) and 2b. Moore, Haynes.

55.—ELEMENTARY METEOROLOGY. Two hours credit. First semester, at 1. A brief course on the causes and effects of atmospheric conditions, such as changes of temperatures winds, humidity, clouds, rain and storms. An understanding of the weather and its effect on man's activities is given. Prerequisites, geology 2 (or 2a) and 2b. (Not given in 1919-'20.) Haynes.

56.—CLIMATES. Two hours credit. First semester, at 1. A study of the elements and control of climates, the natural climatic provinces of the world and the importance of climatic influences on man, as controlling factors in distribution of population, occupations, customs and diseases. Prerequisites, geology 2 (or 2a) and 2b. (Not given in 1918-'19.) Haynes.

57.—GEOGRAPHY OF NORTH AMERICA. Three hours credit. First semester, at 1. A study of the relation of the continent to the world as a whole; the physical features of the continent, its climates and the character and distribution of its natural resources; the influence of geographic conditions in the development and life of the different countries. Prerequisites, geology 2 (or 2a) and 2b. (Not given in 1919-'20.) Moore, Haynes.

58.—GEOGRAPHY OF SOUTH AMERICA. Three hours credit. First semester, at 1. The physical features, climates and resources of the continent; their effects on the development and prospects of the different countries. Special consideration is given to the geographic factors involved in trade between the United States and South America. Prerequisites, geology 2 (or 2a) and 2b. (Not given in 1918-'19.) Moore, Haynes.

59.—GEOLOGY AND GEOGRAPHY OF KANSAS. Two hours credit. Second semester, at 11. A careful study of the geology and physical geography of Kansas, including both economic and paleontologic studies. Prerequisite, geology 2 (or 2a) and 2b. Haworth, Moore, Todd.

HISTORICAL GEOLOGY AND PALEONTOLOGY.

60.—HISTORY OF INVERTEBRATE LIFE. Two hours credit. First semester, at 9. A consideration of the ancient invertebrate life of the earth, its progressive development, its organization into faunas, and the relations of the faunas to environment. Prerequisites, geology 2 (or 2a) and 2b. This course should be followed by zoölogy 61
Moore.

61.—HISTORICAL GEOLOGY. Five hours credit. Second semester, at 9. A study of the geologic history of the earth, the evolution and development of the continents, stratigraphy and the history of plant and animal life from the earliest known beginnings to the present. The geologic significance and use of fossils in the identification and correlation of stratified rocks will be discussed. Prerequisites, geology 2 (or 2a) and 2b. Elementary zoölogy very desirable.
Moore.

62.—INVERTEBRATE PALEONTOLOGY. Five hours credit. First semester, by appointment. A study of the introduction and succession of fossil faunas, their composition, and geographic distribution. Practical exercise in the identification of faunas of different geologic ages is given. A classroom and laboratory course. Prerequisites, geology 2 (or 2a) and 2b.
Moore.

ECONOMIC GEOLOGY.

70.—MINERAL RESOURCES OF THE UNITED STATES. Three hours credit. Second semester, at 11. An introductory course including a general survey of the mineral resources of the United States, and a study of the geologic conditions under which deposits of commercial value are found. Prerequisites, elementary chemistry, and geology 2 (or 2a) and 2b.

Haworth, Moore, Haynes.

71.—ECONOMIC GEOLOGY I. *Metals*. Five hours credit. First semester, at 10. A general study of the metallic products of mine, considered from a scientific and a practical standpoint, including the nature, origin, amount and geographic and geologic distribution of the same. Prerequisites, elementary chemistry and geology 2 (or 2a) and 2b. Lectures and library work.
Haworth, Haynes.

72.—ECONOMIC GEOLOGY II. *Oil, Gas and Coal*. Five hours credit. Second semester, at 10. A careful study of oil and gas regarding nature, origin, geography and geology and economic importance. Much attention is paid to field conditions surrounding different oil fields and best methods for understanding same. Prerequisites, elementary chemistry and geology 2 (or 2a) and 2b.
Haworth, Haynes.

73.—STRUCTURAL AND DYNAMIC GEOLOGY. Five hours credit. First semester at 2. A careful study of geological dynamics and results of dynamic actions, particularly on stratified rocks, and latest and best methods for field operations while studying same. Prerequisites, geology 2 (or 2a) and 2b.
Haworth.

MINERALOGY AND PETROLOGY.

30.*—COMMON ROCKS AND MINERALS. Two hours credit. Second semester, Tu. W., 1 to 3. A short course designed to give the student familiarity with the common rocks and minerals. Practical identification is based chiefly on evident physical characters. The origin and occurrence of the minerals are discussed and a practical classification of the rocks formulated. Prerequisite, elementary chemistry.
Haynes.

31.*—ELEMENTARY MINERALOGY. Five hours credit. Second semester, M. Th. F., 1 to 4. Six hours laboratory work. A brief course in crystallography, and descriptive and determinative mineralogy including blow-pipe analysis. The characteristics of about 150 important minerals will be studied. Prerequisite, elementary chemistry.
Haynes.

81.—ELEMENTS OF PETROLOGY. Two hours credit. First semester, by appointment. Lithology: structure, texture, mineral and chemical composition, and the manner of formation and occurrence of igneous, sedimentary, and metamorphic rocks. Geological problems confronting mining engineers, changes in grade or character of ore deposits. Effect of faulting, folding and intrusions of igneous rocks. This course is adequate for all general field determinations and as an aid in prospecting. Prerequisites, geology 2 (or 2a) and 2b. Haynes.

82.—PETROGRAPHY. Three hours credit. First semester, by appointment. This course consists of training in the methods of petrographic study and includes the macroscopic and microscopic examination of the principal rock types and a consideration of the theories of modern petrology. Prerequisites, geology 2 (or 2a) and 2b. Haynes.

GERMANIC LANGUAGES AND LITERATURES.

Professors: ENGEL,* THURNAU (Chairman of Department).

Associate Professors: CORBIN,† KRUSE.

Assistant Professors: BRIGGS, STURTEVANT, JONES.

Instructors: WILSON, SPANGLER, APPELBOOM.†

EQUIPMENT. The German department has an excellent stereopticon, a balopticon, and over 1,000 stereopticon slides, illustrating scenery, costumes, and biography; an increasing number of excellent photographs and prints in frames; a complete set of German wall maps showing the various separate states, and a few busts. The department has a Columbia graphophone and is accumulating a series of speech records for illustration of differing German pronunciation. There are 5,000 volumes in the library of the German department, and twenty-one philological and literary journals are received.

The department has also a valuable collection of 3,000 unbound dissertations and school programs, covering all fields of Germanistic scholarship. With the present library and this acquisition of special studies the German department is prepared to encourage graduate study in Germanic languages at the University of Kansas.

ADVICE AS TO CHOICE OF COURSES. Students who plan to major in German should consult with the department before the close of the Sophomore year for special guidance in their subsequent work in German and for advice as to courses to be taken in other departments. Courses 1 to 13 are open to all students of the College. Courses 52 to 59 are open to both undergraduates in the College and to graduate students. Courses 1, 2, 3, 4 must be taken in order. Students majoring in German must elect composition, course 10, which should be taken along with course 5 or 6 as a preparation for subsequent courses. From group 5 to 13 at least one more reading course must be taken in preparation for the major group, courses 50 to 57.

1.—ELEMENTARY GERMAN.—ESSENTIALS OF GRAMMAR. Five hours credit. First semester, 8, 9, 10; second semester, 8, 9, 1 to 3. Practice in speaking and writing German. With the afternoon division, from 1 to 3, the laboratory method is used, requiring two hours classroom work and one hour preparation outside.

Engel, Kruse, Jones, Wilson, Spangler.

2.—PROSE READINGS. Five hours credit. First semester, 8 and 11. Second semester, 8, 9, 10. Selected texts from modern writers of short stories with composition and conversation based upon them. Review of grammar topics, with exercises.

Kruse, Sturtevant, Jones, Wilson, Spangler.

* Absent on leave, first semester.

† Absent on leave.

3A.—INTERMEDIATE GERMAN. Five hours credit. First semester, 8, 9, 10. Second semester, 8 and 11. Selected narrative prose texts with composition and conversation based upon them; introduction to classics. Thurnau, Sturtevant, Wilson, Spangler.

3B.—SCIENTIFIC GERMAN. Five hours credit. First semester, 8. A thorough review of grammar; *Das Edle Blut* or equivalent text, 40 to 50 pages, as introductory reading matter, followed by a scientific German reader. This course is intended for students majoring in Science, and may not be counted toward a major in German. The aim of the course is to introduce the student to the style and vocabulary of scientific German and develop the ability to read simple scientific writings. Prerequisite, ten hours of College German. (Not given in 1917-'18.)

4A.—GERMAN CLASSICS. Three hours credit. First semester, 9, 10; second semester, 9, 10. Selected works from Lessing, Schiller, Goethe. Briggs, Jones, Wilson, Spangler.

4B.—SCIENTIFIC GERMAN. Three hours credit. Second semester, at 8. Reading of scientific German texts in class and assigned readings on selected topics outside of class. This course is also intended for students in engineering and medicine and those majoring in science, and may not be counted toward a major in German. Its aim is to develop the rapid reading of more advanced scientific German in special fields. It is planned as a continuation of course No. 3B, but is open to students who have had 3A. (Not given in 1917-'18.)

4C.—ELEMENTARY GERMAN COMPOSITION. Two hours credit. First semester, 9, 10; second semester, 9, 10. Pope's Writing and Speaking German, Part One. Students planning to major in German are required to take this course with 4A. Briggs, Jones, Wilson, Spangler.

5.—WALLENSTEIN. Three hours credit. First semester, at 9; second semester, at 9. Students majoring in German should elect Intermediate German Composition, course 10, in connection with this course.

Kruse.

6.—IPHIGENIE AND NATHAN DER WEISE. Three hours credit. First semester, at 11; second semester, at 10. Thurnau, Engel, Corbin.

7.—MODERN NARRATIVE PROSE. Two hours credit. First semester, at 10. Selections from the best-known writers of the nineteenth and twentieth centuries. Prerequisite, German 4. Jones.

8.—MODERN DRAMATIC PROSE. Two hours credit. Second semester, at 10. Reading of representative plays of the best-known modern dramatists. Open to students who have had German 4. Wilson.

9.—HISTORICAL PROSE. Three hours credit. Second semester, at 11. Introductory reading of Schönfeld's German Historical Prose, followed by more rapid and extensive reading in selected historical writings. The purpose of this course is to develop rapid and intelligent reading of German works and periodicals in history and sociology. Prerequisite, German 4. (Not given in 1917-'18.)

10.—INTERMEDIATE GERMAN COMPOSITION. Two hours credit. First semester, 9; second semester, 9. Required of all students majoring in German. Briggs, Jones.

11.—ADVANCED GERMAN COMPOSITION. Two hours credit. Second semester, at 8. This course is planned especially for those students who expect to teach German, but is open to all who have had course 10. The course aims to develop the ability to write correct and idiomatic German in translation and original compositions, with the mastery of a definite vocabulary. Engel.

12.—GERMAN ORAL COMPOSITION. Two hours credit. First semester, at 8; second semester, at 11. The aim of this course is to aid students in acquiring and using a practical conversational vocabulary. Prerequisite, course 4. Kruse, Thurnau.

13.—LESSING'S LAOCOÖN AND DRAMATURGIE. Three hours credit. Second semester, at 8. Selected portions of these works, with supplementary reading and discussion of the principles of art and the drama.

Thurnau, Corbin.

50.—GOETHE'S FAUST. (Parts I and II.) Three hours credit. Second semester, at 11.

Corbin, Thurnau.

51.—GERMAN LITERATURE. Three hours credit. First semester, at 10. A general survey of the history of German literature from the earliest times to the classical period. Lectures in German in connection with Thomas' History and Anthology.

Thurnau.

52.—HISTORY OF GERMAN PROSE FICTION. Three hours credit. Second semester, at 10. Lectures and selected readings. Special emphasis on the growth of realism in the nineteenth century.

Thurnau.

53.—THE LYRICS OF GOETHE. Two hours credit. First semester, at 8. Study of the lyrics in connection with the life and letters of the author.

Corbin.

54.—THE REALISTIC DRAMA. Three hours credit. First semester, at 8. A brief consideration of the development of the German drama, followed by a more intensive study of the dramas of Hebbel, Ludwig, and Anzen-gruber. Lectures, readings, and reports.

Kruse.

55.—THE NATURALISTIC DRAMA. Two hours credit. Second semester, at 8. Hauptmann, Sudermann, and Halbe. Lectures, readings, and reports. Should be preceded by course 54.

Kruse.

56.—THE ROMANTIC DRAMA. Two hours credit. Second semester, at 8. Heinrich von Kleist, Grillparzer, and Wagner. Lectures, readings, and reports. This course alternates with course 55.

Kruse.

57.—STORM AND STRESS. Three hours credit. Second semester, at 8. Special study of the writings of Goethe and Schiller in this period, with lectures and library reading on the lesser writers and the literary movement as a whole.

Engel.

MODERN SCANDINAVIAN.

58.—MODERN SWEDISH I. Three hours credit. First semester, by appointment. A study of the Swedish language. Elmquist's Swedish Grammar.

Sturtevant.

59.—MODERN SWEDISH II. Three hours credit. Second semester, by appointment. Lectures on Swedish literature. Tegnér's Frithiofssaga, and other works.

Sturtevant.

60.—MODERN NORWEGIAN I. Three hours credit. First semester, by appointment. A study of the Norwegian language. Groth's Dano-Norwegian Grammar; Holvik's Beginners' Book in Norse.

Sturtevant.

61.—MODERN NORWEGIAN II. Three hours credit. Second semester, by appointment. Lectures on Norwegian literature. Ibsen's Samfundets Stötter and Peer Gynt.

Sturtevant.

Swedish and Norwegian are given in alternate years, but either may be given in successive years, if occasion requires.

MODERN DUTCH.

62.—MODERN DUTCH I. Three hours credit. First semester, by appointment. An introductory course, the aim of which is to give a speaking and reading knowledge of Dutch. Special attention will be given to the relation between English, Dutch, and German. Students taking the course should have credit for at least twenty hours of German.

Appelboom.

63.—MODERN DUTCH II. Three hours credit. Second semester, by appointment. This is a continuation of course I and includes a general survey of Dutch literature from 1600 to the present time with lectures and selected readings.

Appelboom.

GREEK.

Professor: WILCOX.

Associate Professors: STERLING (Chairman of Department),
BRANDT.

EQUIPMENT. Twelve casts of Greek sculpture in the round, ten busts; the east frieze and twelve slabs of the north, and three metopes of the Parthenon, and four other reliefs; a model of the Acropolis of Athens, the east pediment of the temple of Zeus at Olympia, and the Victories of Paionios and Samothrace; a relief map of Athens, and numerous wall maps; a series of facsimile reproductions of Mycenæan works of art; a few original ancient coins; 800 photographs; 500 plates (many colored) of architecture and vases and paintings; 55 illustrated folios; 3,000 volumes in the library; 15 current periodicals; and a stereopticon with 3,000 slides.

FOR STUDENTS OF CLASSICAL GREEK.

1.—**ELEMENTARY GREEK.** Five hours credit. First semester, at 9. Introductory course, covering the forms, syntax, and vocabulary necessary as a foundation for reading the literature. Sterling.

2.—**XENOPHON'S ANABASIS.** Five hours credit. Second semester, at 9. Application of principles learned in the preceding course, with a study of Xenophon's life and works. Sterling.

3.—**HOMER'S ILIAD.** Three hours credit. First semester, at 10. Reading of as much as possible in the original, and the rest in translation. Study of Homeric forms and versification. Brandt.

4.—**PLATO'S APOLOGY, CRITO,** and selections from the Phædo and Symposium. Three hours credit. Second semester, at 10. Study of the life and work of Socrates. Brandt.

5.—**HERODOTUS.** Two hours credit. Second semester, at 10. Reading of as much as possible in the original, and the rest in translation. Study of style and influence of Herodotus. Brandt.

6.—**GREEK TRAGEDY.** Three hours credit. First semester, at 9. The Antigone of Sophocles and Iphigenia in Tauris of Euripides. Study of the Greek theater and dramatic form. Brandt.

7.—**DEMOSTHENES.** Three hours credit. Second semester at 3. The Philippics and Olynthiacs. Study of the life and times of Demosthenes. Brandt.

51.—**ELEMENTARY GREEK** Five hours credit. First semester, at 1. The same as course 1, except that more work will be required. Sterling.

52.—**XENOPHON'S ANABASIS.** Five hours credit. Second semester, at 1. The same as course 2, except that more will be read. Sterling.

53.—**HOMER'S ILIAD.** Three hours credit. First semester, at 11, or by appointment. Reading of the whole book in the original, with critical study of select portions. Study of the Epic and Homeric life and times. (Not given in 1918-19.) Brandt.

54.—**PLATO'S GORGIAS OR REPUBLIC.** Three hours credit. Second semester, at 2, or by appointment. Outside reading of other dialogs of Plato. Study of the life and thought of his time. (Not given in 1918-19.) Brandt.

55.—**LYRIC POETRY.** Two hours credit. First semester, at 3, or by appointment. Selections from Elegiac, Iambic, and Melic poetry. (Not given in 1918-19.) Brandt.

56.—**GREEK COMEDY.** Two hours credit. Second semester, at 11, or by appointment. The Clouds and Frogs of Aristophanes. Study of the origin and development, form and content of Greek comedy. (Not given in 1918-19.) Brandt.

57.—**HOMER'S ODYSSEY.** Three hours credit. First semester, at 11, or by appointment. Reading of the whole book in the original, with critical studies of select portions. Brandt.

58.—ALEXANDRIAN LITERATURE. Three hours credit. Second semester, at 2, or by appointment. Theocritus, Apollonius Rhodius, and the Anthology. Study of pastoral poetry and the late epic, and their influence on Latin and later poetry. Brandt.

59.—THUCYDIDES. Two hours credit. First semester, at 3, or by appointment. Reading of as much as possible in the original, and the rest in translations. Studies in his style and historical method compared with Herodotus and later and modern historians. Brandt.

60.—ARISTOTLE. Two hours credit. Second semester, at 11, or by appointment. The Poetics, and selections from the Politics and Ethics. Study of Aristotle's place in the history of thought. Brandt.

FOR STUDENTS OF THE NEW TESTAMENT.

12.—ELEMENTARY NEW TESTAMENT GREEK. Five hours credit. Second semester, at 10. An introductory course for students who have no knowledge of Greek and wish to learn to read the New Testament in the original. Sterling.

13.—NEW TESTAMENT I. Two hours credit. First semester, at 10. Reading of as much of the New Testament in the original as possible. Prerequisite, course 12, or 1 and 2. Sterling.

63.—NEW TESTAMENT II. Two hours credit. First semester, at 8. The same as course 13, except that more work will be required. Sterling.

FOR STUDENTS OF ENGLISH AND NATURAL SCIENCES.

61.—THE GREEK IN ENGLISH. Three hours credit. First semester, at 8. A study of English etymology, with especial reference to Greek. Only so much Greek is studied as is necessary for the end in view. Sterling.

COURSES WHICH REQUIRE NO KNOWLEDGE OF THE GREEK LANGUAGE.

65.—GREEK POETRY IN TRANSLATIONS. Three hours credit. First semester, at 11. The epic and lyric poetry of the classic and Alexandrian ages. Study of form and content and influence on later poetry. Brandt.

66.—THE GREEK DRAMA IN TRANSLATIONS. Two hours credit. Second semester, at 11. Ten to twelve dramas of Æschylus, Sophocles, Euripides and Aristophanes are read and discussed from the points of view of form and content and influence on later and modern dramas. Brandt.

68.—GREEK PROSE MASTERPIECES IN TRANSLATIONS. Three hours credit. Second semester, at 2. Study of the form and content and influence of the principal works of the historians, orators, and philosophers; especially Herodotus, Thucydides, Demosthenes, and Plato. Sterling.

69.—GREEK ARCHITECTURE. Two hours credit. First semester, at 11. This course includes the fundamental principles of all styles, with special reference to the survivals and revivals of Greek elements. The result ought to be a knowledge of all historic styles, and not simply the Greek. Brandt.

70.—GREEK SCULPTURE AND PAINTING. Three hours credit. Second semester, at 11. This course includes, for purposes of comparison and appreciation, a summary view of the sculpture and painting of later and modern times. Brandt.

HISTORY.

Professors: HODDER (Head of Department), PATTERSON.
Associate Professors: CRAWFORD, DAVIS.
Assistant Professor: MELVIN.

EQUIPMENT. The University library is supplied with all the important secondary authorities and with the source material suitable for undergraduate use. The latter includes the compilation of French, British and American statutes, and complete sets of the *Archive Parlementaire*, *Hansard's Debates*, and the successive congressional series. The periodical collections are slight but fairly comprehensive, including the *Moniteur* (not yet complete), the *Annual Register*, *Gentleman's Magazine*, *DeBow's Review*, and a file of the *National Intelligencer*. The supply of wall maps for class room use is exceptionally large.

ADVICE AS TO CHOICE OF COURSES. The plan of the department is to furnish general courses for long historical periods, a series of intensive courses for shorter periods, and a limited number of courses in special fields. The courses in mediæval and English history serve as an introduction to all the work of the department. The general courses in modern European and American history are suited to the needs of students who do not intend to specialize in history, and the general course in one of the two fields may be taken to advantage by those intending to specialize in the other. A reading knowledge of French and German is advantageous to upper-class students of history and indispensable to graduates. Students intending to take a major in this field should, early in their course, consult the instructors in the department in regard to the best arrangement of their work.

RECOMMENDATION OF TEACHERS. Students desiring the recommendation of the department as teachers of history in high schools, must in addition to completing a major in the department, cover, in a manner satisfactory to the department, the field of history that is taught in the high schools of the state. Such students should as early as practicable in their course seek the advice of the department as to the work that will be required of them and the best order in which it may be taken.

1.—**MEDIÆVAL HISTORY I.** Three hours credit. First semester, M. W., at 8, and third hour by appointment. A history of Europe from the barbarian invasions to the crusades. A fundamental course introductory to all the work in European history. Lectures, quizzes, collateral reading, and reports. Patterson.

2.—**MEDIÆVAL HISTORY II.** Three hours credit. Second semester, M. W., at 8, and a third hour by appointment. Covers the history of Europe from the crusades to the beginning of the sixteenth century. Lectures, quizzes, collateral reading, and reports. Continues and should be preceded by mediæval history I. Patterson.

3.—**ENGLISH HISTORY.** Five hours credit. First semester, at 9 and 10; second semester, at 9 and 10. Traces the development of England, Scotland, and Ireland with emphasis upon the growth of economic, social, and political institutions. Recitations and occasional lectures. Not open to students who have entrance credit for English history. Crawford.

4.—**OUTLINES OF MODERN EUROPEAN HISTORY.** Five hours credit. Second semester, at 11. A preliminary survey of the evolution of modern Europe, stressing the period from 1500 to 1815. Continues the course in mediæval history and should be supplemented by the course on contemporary Europe. Largely a textbook course. Melvin.

5.—**AMERICAN HISTORY.** Five hours credit. Both semesters, at 8. A general survey of American history from the discovery to the present time. Same as courses 6 and 7. Not open to students who have entrance credit in American history. Davis.

6 *a* and *b*.—AMERICAN HISTORY I. Three or two hours credit. First semester, *a*, three hours, at 9, and *b*, two hours at 9, same as the first part of course 5, coming down to 1820 in the three-hour course and to 1789 in the two-hour course. Not open to students who have entrance credit for American history. Davis.

7 *a* and *b*.—AMERICAN HISTORY II. Three or two hours credit. Second semester, *a*, three hours, at 9, and *b*, two hours, at 9. Same as the last part of course 5. Preferably preceded by courses 6 *a* or *b*. 7 *a* continues 6 *b* from 1789 and 7 *b* continues 6 *a* from 1820. Not open to students who have entrance credit for American history. Davis.

50.—GREEK HISTORY. Two hours credit. First semester, at 10. The course will trace the political and intellectual development of the Greeks and emphasize social and economic changes. Lectures, quizzes, and collateral reading. Patterson.

51.—ROMAN HISTORY. Two hours credit. Second semester, at 10. A general survey, in which the period of the late republic and early empire receives special attention. Continues but not necessarily preceded by Greek history. Patterson.

52.—MEDIÆVAL CULTURE. Two hours credit. First semester, at 9. A survey of the intellectual development of Europe from Augustine to Dante, including such subjects as mediæval literature, scholasticism, the universities, architecture, and the rise of the vernacular languages. Must be preceded by courses 1 and 2. (Not given in 1918-'19.) Patterson.

53.—MEDIÆVAL INSTITUTIONS. Two hours credit. First semester at 9. Growth of political and ecclesiastical institutions during the feudal period, and a detailed analysis of the organization of society in the twelfth and thirteenth centuries. Must be preceded by courses 1 and 2. Patterson.

54.—ITALIAN RENAISSANCE. Two hours credit. Second semester, at 9. A survey of the political, social, economic, intellectual, and artistic development of the Italian people from the fourteenth to the sixteenth centuries. Must be preceded by courses 1 and 2. (Not given in 1918-'19.) Patterson.

55.—THE PROTESTANT REVOLT. Two hours credit. Second semester, at 9. After a review of the social, economic, and intellectual antecedents of the movement in Germany, the career of Luther and the progress of the revolt to the Peace of Augsburg will be traced. Prerequisites, courses 1 and 2. Patterson.

56.—ENGLISH INSTITUTIONS I. Two hours credit. First semester, at 8. Treats of the Anglo-Saxon government, the foundations of parliament, the central and local government, the judiciary, feudalism, the manorial system and guilds. Lectures, reports, and collateral reading. (Not given in 1918-'19.) Crawford.

57.—ENGLISH INSTITUTIONS II. Two hours credit. Second semester, at 8. Treats of the Tudor absolutism, the Reformation, the struggle between the crown and parliament, with special emphasis upon the nineteenth century. Continues and must be preceded by English Institutions I. (Not given in 1918-'19.) Crawford.

58.—HISTORY OF THE COMMON LAW I. Two hours credit. First semester, at 8. Treats of the fundamental principles of Anglo-Saxon law and procedure, the transition to common law, the growth of the judiciary, and the general principles of status and of real property. Primarily designed for students preparing for law, journalism, and business. Crawford.

59.—HISTORY OF THE COMMON LAW II. Two hours credit. Second semester, at 8. Treats of the general principles of personal property, contracts, torts, crimes, and civil and criminal procedure. Continues and must be preceded by History of Common Law I. Crawford.

60.—FOUNDATIONS OF MODERN EUROPE. Three hours credit. First semester, at 1. A survey of the political and social development of Europe from 1500 to 1815. Not open to students who have had course 4. Either this course or course 4 should precede all other courses in modern European history. Largely recitations. Melvin.

61.—HISTORY OF CONTEMPORARY EUROPE. Three hours credit. Second semester, at 1. Covers the history of Europe from 1815 to 1914. Continues the preceding course and should be preceded by it or by course 4. Melvin.

62.—FRENCH REVOLUTION. Three hours credit. First semester, at 2. The origins and development of the revolutionary movement in France and its effect upon Europe. Should be preceded either by course 4 or course 60 or an equivalent. Melvin.

63.—NAPOLEON. Two hours credit. Second semester, at 2. The career and age of Napoleon with special reference to the revolutionary reconstruction of France and of Europe. Continues and should be preceded by the preceding course. Melvin.

64.—DIPLOMACY OF THE WAR. Three hours credit. Second semester, at 11. A systematic review of the course of recent world politics and of the causes and the diplomatic problems involved in the Great War. Davis.

65.—PROBLEMS OF MODERN EUROPEAN HISTORY I. Two hours credit. First semester, at 2. Studies in special fields of modern European history, designed to give intensive study of certain topics covered in the general courses and preliminary training in historical research. The topics will vary with the needs of the students taking the course. Must be preceded by the general course covering the field of research. Melvin.

66.—PROBLEMS OF MODERN EUROPEAN HISTORY II. Two hours credit. Second semester, at 2. This course is the same in character as the preceding, and either continues the work of the preceding course or takes up new topics for students not having taken the preceding course. Melvin.

67.—AMERICAN COLONIAL HISTORY. Three hours credit. First semester, at 2. This course covers the discovery of America, the period of Spanish and French exploration, and the origin and development of the English colonies. Hodder.

68.—THE REVOLUTION AND THE CONSTITUTION. Three hours credit. Second semester, at 2. A study of the causes and results of the American Revolution and of the formation of the constitution. A continuation of course 67, but not necessarily preceded by it. Hodder.

69.—AMERICAN CONSTITUTIONAL LAW. Two hours credit. Second semester, at 2. A study of the judicial construction of the constitution of the United States from the political rather than from the legal standpoint. Recitations. Hodder.

70.—PRESIDENTIAL ADMINISTRATIONS I. Five hours credit. First semester, at 3. The political and constitutional history of the United States from 1789 to 1840. A topical treatment of the most important phases of American history. Should be preceded by course 69. Hodder.

71.—PRESIDENTIAL ADMINISTRATIONS II. Five hours credit. Second semester, at 3. The political and constitutional history of the United States from 1840 to 1900. The causes and results of the Civil War. Continuation of course 70, but not necessarily preceded by it. Hodder.

72.—LATIN AMERICA. Three hours credit. First semester, at 11. The origin of the Spanish, Portuguese, and French colonies in America; the modification in Latin America of European institutions and culture; the struggle for independence and the succeeding national development and international relations of the Latin American states. Davis.

HOME ECONOMICS.

Professor: SPRAGUE (Head of Department).

Associate Professor: TEETOR (Acting Head).

Assistant Professor: SMITH.

Instructors: ALLEN, WOODRUFF, HAZEN, MEGUIAR.

EQUIPMENT. The department occupies nine rooms in Fraser Hall. These include two food laboratories, a chemical laboratory, a research laboratory, a textile and sewing room, and two lecture rooms with an experimental and demonstration kitchen in connection with one of them. The laboratories are equipped both for general class work and for research. The library contains the standard books on the subject.

ADVICE TO STUDENTS. The courses of instruction given in this department are planned to meet the needs of three classes of students: (a) those who desire a knowledge of the general principles and facts of home economics; (b) those who wish to major in home economics for the purpose of teaching the subject in secondary schools and colleges; (c) those who are interested in preparing to become dietitians, or to follow other professions.

Students who belong to groups (b) and (c) are advised to begin their work in the department as early as possible in order to secure a proper sequence of the elementary and advanced subjects; to have a desirable distribution of courses; to become thoroughly familiar with the subject matter before undertaking the course in the teaching of home economics and practice teaching; and, in the case of those who wish to do more advanced work, to provide for the necessary training in the fundamental sciences. Such students should consult the head of the department before arranging their courses.

ADVICE AS TO COURSES. Courses of a general nature which are suggested for students who are not majoring in the department, but who wish some training in the subject pertaining to the home, are as follows: (1) Home Architecture, (2) Home Decoration, (65) Public Aspects of the Household, (71) Textiles, (72a) Clothing Design, (6) Food Conservation.

MAJOR REQUIREMENTS. Students may satisfy part of the requirement for the major in the department by the election of any of the following allied subjects in other departments: (53) Bacteriology of Foods, (60) Chemistry of Food Products, (52D) Food Analysis, (64) Heredity in Relation to Eugenics.

In general, the major in the department is as follows:

MAJOR IN HOME ECONOMICS.

(Freshman-Sophomore.)

PREREQUISITE.	PRESCRIBED.	Hrs.	SUGGESTED.	Hrs.
	1. Home architecture and sanitation	2	0. Sewing	0
Chemistry 1	3. Selection and preparation of food.....	5	2. Home decoration I..	2
Selection and preparation of food	4. Economic uses of food,*	5		

(Junior-Senior.)

71. Textiles	3	51. Dietetics	5
Economic uses of food, or Textiles	3	72. a Clothing (design) ..	3
Home architecture, etc...		b Clothing (mfg.) ...	2
Economics 1			
Sociology	80. Home administration,	65. Public aspects of the household	3
Economic uses of food or. Organic chemistry	3-5	81. Home decoration II..	3
Bacteriology, or		53. Special problems in home economics ..	3-5
Botany 4, or.....			
Dietetics			

0.—PLAIN SEWING AND GARMENT MAKING. No credit. First semester, Tu. Th., 1 to 4. Principles and practice in hand and machine sewing, drafting, and making of simple garments. This course is offered because the majority of students have not had the opportunity of taking it in the high school. It is prerequisite to course 72*b*. Fee, \$1 Allen.

1.—HOME ARCHITECTURE AND SANITATION. Two hours credit. Both semesters, 9 and 1. A study of the evolution of the house; the development of its functions as a place of shelter, defense, and the center of family life; types of domestic architecture; the planning and care of the house with regard to the comfort, convenience, and health of the family. Meguiar.

2.—HOME DECORATION. Two hours credit. Both semesters, 11 and 12. The theory of color and decoration and its application in home decoration; materials suitable for various purposes in the home; furnishings from an economic, sanitary, and artistic standpoint. Meguiar.

3.—SELECTION AND PREPARATION OF FOOD. Five hours credit. Both semesters, M. W. F., 8 to 10, and Tu. Th., 9; M. W. F., 10 to 12, and Tu. Th., 10. An experimental study of the different classes of nutrients, with the application of this knowledge in the selection and preparation of foods. Prerequisite, chemistry 1. Advised, physiology 1. Fee, \$5. Sprague, Allen, Hazen, Woodruff.

4.—ECONOMIC USES OF FOOD.* Five hours credit. Both semesters, M. W. 1 to 4; Tu. Th., 1 to 2. The principles of food preservation, marketing and domestic storage; the planning of meals to prevent waste, give variety, and regulate cost according to food values. Prerequisite, course 3. Fee, \$4. Woodruff.

6*a*.—FOOD CONSERVATION. Three hours credit. Both semesters, at 1. The purpose of this course is to present in a nontechnical way the more elementary problems of food and nutrition with reference to the food requirements of man and the considerations which should underlie our judgment of the nutritive value of food. Designed for the general student.

6*b*.—FOOD CONSERVATION. (Laboratory Work.) Two hours credit. Both semesters, Tu. Th., 1 to 3. To be taken only as a parallel course with 6*a*. This course is designed to give a practical application of the principles embodied in 6*a*.

51.—DIETETICS. Five hours credit. Second semester, M. W. F., 10; and Tu. Th., 10 to 12. The principles of diet; the relation of food to health; food habits and dietary standards; the dietetic treatment of diseases; experimental study of special problems in nutrition. Prerequisites, economic uses of food, organic chemistry, physiology 1. Physiological chemistry advised. Fee, \$2.50. Woodruff.

52.—SPECIAL PROBLEMS IN HOME ECONOMICS. I. Three or five hours credit. First semester. A critical study of common theories and practice in food preparation and other home activities, with experimental investigation of special problems. Prerequisites, economic uses of food, elementary organic chemistry; bacteriology, or botany, or dietetics. Qualitative and quantitative chemistry advised. Fee, \$3 or \$5. Sprague.

53.—SPECIAL PROBLEMS IN HOME ECONOMICS II. Three or five hours credit. Second semester. Fee, \$3 to \$5. The work of each student will be under the direction of the member of the staff in charge of the subject chosen. A continuation of course 52.

65.—PUBLIC ASPECTS OF THE HOUSEHOLD. Three hours credit. Both semesters, 9. This course is designed to give the student a view of the broader aspects of home economics as it is related to the welfare of the community. Special emphasis will be laid upon the state and federal laws which are most directly connected with the home. Designed especially for the general student. Hazen.

71.—TEXTILES. Three hours credit. Both semesters, M. W., 8 to 10; F., 9. A study of the production and manufacture of textiles from the standpoint of the consumer; the properties and uses of the different textile fibers and fabrics; tests for adulteration; principles of cleaning fabrics. Prerequisite, chemistry 1. Fee, \$2. Allen.

72a.—CLOTHING DESIGN. Three hours credit. First semester, 2. A study of the history of costume with emphasis upon the factors influencing its design; the psychology of fashion; the hygiene of dress. Prerequisite, Design II. Allen.

72b.—CLOTHING MANUFACTURE. Two hours credit. Second semester, Tu. Th., 1 to 4. Laboratory practice in carrying out designs; economic problems of the construction of clothing at home; economic and sociological phases of the clothing industry. Prerequisites, course 0 or equivalent, and 72a. Fee, \$2. Allen.

80.—HOME ADMINISTRATION. Three hours credit. Second semester, 10. A study of the home as a social unit and a classification of its problems; a brief history of the changes that have come in the work of women in the home; the economic and sociological value of home-making; the organization of the household, division of the income, general principles of buying. Prerequisites, economic uses of foods, or textiles; home architecture and sanitation, sociology 1, economics 1, or 90. Advised, zoölogy 60 and 64. Sprague.

81.—HOME DECORATION II. Three hours credit. Second semester, 8 to 10. A continuation of home decoration I, emphasizing the general principles of design in their application in the home. A study of selected problems in practical household designing. Prerequisite, design. Meguiar.

JOURNALISM.

Professor: FLINT (Chairman of Department).

Assistant Professors: RICE, LOUD.

Instructor: DILL.

Assistant Instructor: BROWN.

Men and women intending to enter newspaper work as a profession or as a stepping stone to higher literary endeavor are here given the opportunity for specialized training accorded other professions. The department offers technical courses in the Sophomore, Junior, and Senior years, makes suggestions as to preparatory courses in the Freshman year, and recommends supplementary courses to be pursued in the four years.

Students intending to do their major work in this field, and particularly those planning to do graduate work in journalism, should consult the faculty of the department as early as possible.

Those interested in the study of the newspaper as an organ of democracy or in its historical or ethical aspects will find in the department several courses general in their scope.

PRACTICAL WORK. The *University Daily Kansan*, published by students of the University, affords every opportunity to put the theory of the classroom into practice. From reporter to editor-in-chief, the student learns at first hand the organization of the newspaper office, becomes familiar with the mechanical, economic and ethical problems, and acquires speed and accuracy in reportorial work and editorial supervision. Instruction in business management, particularly the science of cost finding, is emphasized.

EQUIPMENT. The laboratory of the department has all the facilities that go to make up a modern "back office." It is equipped with type-setting machines, linotypes and a monotype, a complete composing room, a book and newspaper press, and job presses.

Reporter's desks in the "front office" are equipped with typewriters. The library of the department, containing a wide assortment of books on all phases of journalism, is in a room convenient to the news rooms and offices.

Thirty-six metropolitan dailies, representing the great newspaper personalities of the world, are received, together with the leading national weeklies and magazines. Five hundred Kansas papers also reach the laboratory regularly.

FEEs. Each student enrolled in the department pays a fee of fifty cents to cover, in part, the cost of newspapers and magazines used in the daily work.

DESCRIPTION OF COURSES

1.—**THE NEWSPAPER I.*** Three hours credit. Both semesters. First semester, at 8 and 11; second semester at 10. Materials and methods. The news story. The human-interest story. The feature. The editorial. Gathering and writing campus news. Correspondence for metropolitan papers. The fundamental principles of accuracy and style. Prerequisites, rhetoric 1 and 2. Rice, Loud, Dill.

2.—**THE NEWSPAPER II.*** Three hours credit. First semester, at 10; second semester, at 8 and 11. Organization of the office; function of departmental heads, editor-in-chief, managing, news, city and telegraph editors; subeditors, financial, sporting, society, etc.; copy readers, reporters; press associations; women in newspaper work; types of news stories. Practical work daily in reporting. A continuation of course 1. Rice, Loud, Dill.

3.—**COMPARATIVE JOURNALISM.*** Two hours credit. First semester, at 10. A general course for those interested in the newspaper whether or not intending to major in journalism. Intensive study of great newspaper personalities of all types in American journalism, with lectures on journalism in England, France, Germany, and the Orient. Flint.

4.—**HISTORY OF AMERICAN JOURNALISM.*** Two hours credit. Second semester, at 10. A rapid survey of English journalism from its beginning, followed by a comprehensive study of American journalism from the early beginnings in Massachusetts, through succeeding periods, to the present. Special studies of the careers of great American editors. Dill.

51.—**MAGAZINE WRITING.** Three hours credit. First semester, at 8. Intensive study of major types of magazine special articles: nature and sources of material for them; variety in treatment of them. Coördinated practice work judged on its publication possibility, with final grade based on proportion of acceptable material. Class discussions and personal conferences on manuscript. Loud.

52.—**THE SHORT STORY.** Three hours credit. Second semester, at 8. Comprises (1) reading of selected short stories for analytical and comparative purposes to illustrate principles governing construction of short stories, (2) attention to guiding lectures, (3) creative writing, and (4) participation in class critical discussions and personal conferences on manuscript. Production judged by availability for publication. Loud.

53.—**INTERPRETATION OF THE NEWS I.** Two hours credit. First semester, at 10. Writing the shorter editorial, generated from continuous wide observation and clear consideration of current events; working out appropriate forms in close study of contemporary editorials. Class lectures, discussions, and personal conferences to criticize manuscript. Loud.

54.—**INTERPRETATION OF THE NEWS II.** Two hours credit. Second semester, at 10. Writing the longer editorial from mature determination of significance and relationship of facts in state, national, and international news. Thorough training in lucid, logical, adequate, concise expression of

opinion in vigorous, moving English style. Lectures and personal conferences. Loud.

55.—ADVERTISING I. Three hours credit. First semester at 10 and 11. A study of the fields for newspaper, magazine, bill-board, street-car, and novelty advertising. The organization of the advertising business. Good and bad advertising copy. The mathematics of returns. (With practice in advertising salesmanship for the members of the class who desire it.) Flint.

56.—ADVERTISING II. Three hours credit. Second semester, at 10 and 11. The psychology of advertising. Application of theory to practice by the preparation of advertising copy and the planning of advertising campaigns. (With practice in advertising salesmanship for the members of the class who desire it.) Flint.

57.—NEWSPAPER ADMINISTRATION I. Two hours credit. First semester, at 9. A study of the business side of newspaper publishing, designed to familiarize the student with the equipment of a newspaper plant, the expenses of publishing a paper, its sources of income, the handling of circulation and advertising, and the operation of a job-printing establishment. Flint.

58.—NEWSPAPER ADMINISTRATION II. Two hours credit. Second semester, at 9. Intensive study of methods for finding printing costs. How to conduct a printing business efficiently. Estimating. The terminology of printing. Judging paper stock. Flint.

59.—EDITORIAL PROBLEMS AND POLICIES I. Three hours credit. First semester, at 9. Ethics of journalism. Problems of the editor: his relation to the public. The managing editor: outlining newspaper campaigns. The news editor: his editorial capacity in display, quantity and position of news; and kindred problems. Flint.

60.—EDITORIAL PROBLEMS AND POLICIES II. Three hours credit. Second semester, at 9. Consideration of typical problems growing out of the relations between the newspaper and its readers, its advertisers, its community, and the public in general. Sources of the newspaper's influence. Fields for dynamic journalism. Flint.

61.—EDITORIAL PRACTICE I. Two hours credit. First semester, at 11 and 3. Practical application of the editor's work in supervising and in handling, collecting, preparing and editing copy for dailies, weeklies and class publications. Actual copy-reading of local news, Associated Press and United Press full reports and special stories. The principles of make-up, with particular stress on headline writing. Rice.

62.—EDITORIAL PRACTICE II. Two hours credit. Second semester, at 11 and 3. Continuation of 61, with a comprehensive review of libel, postal regulations, copyright. The student is required to cover the field of libel in law of text and case books, and is given practice in eliminating libelous assertions from copy. A comparison of the styles of different papers as affecting the copyreader, particularly as to make-up. Rice.

65.—THE MECHANICS OF PRINTING. No credit. Both semesters. Two lectures and eight hours laboratory weekly. Students are taught to set type, make up and lock up forms, etc. This class will work on the mechanical end of the University publications. Brown.

66.—THE ART OF PRINTING. No credit. Both semesters. Two lectures and five hours laboratory. Lectures on history and development of printing, with practical work in designing advertisements, title pages, etc., and study of color schemes. Brown.

NOTE.—Courses 65 and 66 are designed, first, to give the student a working knowledge of the mechanical department of a newspaper, that he may be better fitted for editorial supervision; second, to equip better those students who plan to own country papers; third, to reinforce rhetorical principles of mass, proportion, accuracy, emphasis, contrast, harmony, unity, and variety, by practical work with type faces.

67.—ADVANCED NEWS WRITING I. Two hours credit. First semester, at 8. Prerequisite, Newspaper 1 and 2. Survey of news types, estimation of news values, the utilization of ways and means of exploring, assembling, and handling. Class analysis of best specimens, assigned "rewrite" syntheses illustrative of the ascertained common procedures. Lectures and class discussions. Loud.

68.—ADVANCED NEWS WRITING II. Two hours credit. Second semester at 8. Special assignments for mature practice, especially in getting and constructing campus feature stories; the University publicity stories of wider scope, and town, city, and state popular-movement, business, industry, farming, commercial-scientific, and individual-personal newspaper special section stories. Class exchange and criticism; effort to place successful copy. Loud.

NOTE.—A special section of this course is offered at 11 for Seniors intending to teach in secondary schools. No prerequisites. A course giving general knowledge of the field of journalism, fundamental methods for teaching newspaper writing in high schools, and practical information for operating a high-school paper.

LATIN LANGUAGE AND LITERATURE.

Professor: WALKER (Head of Department).

Associate Professors: OLIVER, MURRAY.

Assistant Professor: CRESSMAN.

EQUIPMENT. The department is well supplied with wall maps, books of reference and supplementary reading for all courses, photographs, and a large collection of antiquities illustrating many phases of Roman life. Its library equipment includes the Corpus of Latin Inscriptions and complete sets of all important classical journals. In addition to the general illustrative material of the classical museum, the department has about 750 large mounted photographs and many smaller unmounted ones. These are supplemented by a considerable collection of bronze, marble, and terra cotta antiquities.

ADVICE AS TO CHOICE OF COURSES. Those who intend to take only five hours of Latin to satisfy a group requirement must take course 1 if they have entered with no Latin, course 2 if with one unit, course 3 if with two units, course 4 if with three units. If they have entered with four units, they may select any five hours out of courses 5, 6, and 7.

Those who intend to major in Latin or to make Latin a minor for the teachers' diploma, and those who expect a recommendation from the department as teachers of Latin, must take courses 5, 7, 9, and 13. Those whose preparation has not been of the best are advised to take course 6 with course 5, and course 8 with course 7; those whose work is not entirely satisfactory may be required to take those courses before taking other courses in the department. Courses 10, 50, and either 8 or 51 are required of those who major, except by special permission.

Those who wish to do the best work in Latin, especially those who look forward to graduate study in the subject, will need Greek and a reading knowledge of French and German.

1.—ELEMENTARY LATIN. Five hours credit. First semester, at 10. Though intended as a preparation for the further study of Latin, this course is planned largely for those whose chief interest is in English or the modern languages; general principles of language structure and development and the influence of Latin on English are emphasized as much as possible. Open to all who have had no Latin in the high school. Oliver.

2.—CÆSAR (four books). Five hours credit. Second semester, at 9. Weekly exercises in Latin composition. Open to those who have had course 1 or its equivalent and have not read Cæsar in the high school. Oliver.

3.—CICERO (six orations). Five hours credit. Weekly exercises in Latin composition. Open to those who have had course 2 or its equivalent and have not read Cicero in the high school. (Not given in 1918-19.)

4.—VERGIL'S *ÆNEID* (six books). Five hours credit. First semester, at 8. With the study of mythology and careful practice in metrical reading. The chief emphasis will be laid on the literary side of the work. Open only to those who have had three units of Latin, not including Vergil. Murray.

5.—CICERO (*De Senectute*). Three hours credit. Both semesters, at 9. With prose composition and a thorough review of the grammar. Open to those who have had four units of Latin, recommended to all who expect to take further courses in Latin, and required of all who expect to prepare for teaching Latin.

First semester, Oliver; second semester, Murray.

6.—LIVY (one book). Two hours credit. Both semesters, at 9. This course is intended to accompany course 5, but may be omitted by well-prepared students.

First semester, Walker; second semester, Murray.

7.—HORACE (*Odes*). Three hours credit. Second semester, at 10. With careful practice in metrical reading. The chief emphasis is laid on the literary side of the work. Must be preceded by course 4; should be preceded by either 5 or 6. Oliver.

8.—TERENCE (two plays). Two hours credit. Second semester, at 11. Must be preceded by course 5. Intended to accompany course 7. Those who must choose between 7 and 8 are advised to take 7. Those who elect it when qualified to elect course 51 will be required to read an additional play. Walker.

9.—CICERO'S *LETTERS*. Three hours credit. First semester, at 10. The chief emphasis is laid on the historical points involved, so that the student gets a good knowledge of the period in which Cæsar and Cicero lived. Must be preceded by five hours beyond course 4. It is strongly recommended that course 13 be taken at the same time. Walker.

10.—HISTORY OF ROMAN LITERATURE.* Two hours credit. Second semester, at 10. Mackail's *Latin Literature*, supplemented by lectures and assigned readings in English translations of the more important authors. No Latin preparation required. Oliver.

11.—HORACE (*Satires and Epistles*). Two hours credit. (Not given in 1918-19.)

12.—ROMAN PRIVATE LIFE. One hour credit. Second semester, Tuesday, at 8. Johnston's *Private Life of the Romans*, supplemented by occasional lectures and the use of illustrative material. Prerequisite, five hours beyond course 4. Oliver.

13.—LATIN COMPOSITION. Two hours credit. First semester, at 10; second semester at 1. Part I or part II of Nutting's *Advanced Latin Composition*, or an equivalent. Intended to accompany course 9, but may be taken earlier by well-prepared students, the only necessary preparation being given in course 5. Required of all who wish a recommendation from the department as teachers of Latin.

First semester, Walker; second semester, Oliver.

50.—ADVANCED LATIN COMPOSITION. Two hours credit. First semester, at 1. Prerequisite, course 13. Required as part of major.

Walker.

Each of the following reading courses, 51 to 58, inclusive, must be preceded by at least eleven hours from courses 5 to 13, inclusive.

51.—PLAUTUS. Two hours credit. First semester, at 1. Murray.

52.—VERGIL'S *ECLOGUES AND GEORGICS*. Two hours credit. Second semester, at 10. Walker.

- 53.—CATULLUS, TIBULLUS, AND PROPERTIUS. Two hours credit. (Not given in 1918-'19.)
- 54.—PLINY'S LETTERS. Two hours credit. (Not given in 1918-'19.)
- 55.—LUCRETIVS. Three hours credit. (Not given in 1918-'19.)
- 56.—THE ANNALS OF TACITUS. Three hours credit. Second semester, at 8. Murray.
- 57.—JUVENAL. Three hours credit. (Not given in 1918-'19.)
- 58.—LITERATURE OF THE EMPIRE. Three hours credit. First semester, at 11. A study of the history of literature under the empire, supplemented by the reading of portions of the most important works. Oliver.
- 59.—ROMAN POLITICAL INSTITUTIONS. Three hours credit. First semester, at 1. A study of the development and form of the Roman governmental system through the republic and the early empire. The course will be conducted by lectures and assigned readings. Prerequisite, three years of high-school Latin or their equivalent. Murray.
- 60.—CÆSAR'S GALLIC CAMPAIGNS. Three hours credit. Second semester, at 1. A critical study of the Gallic War, with especial reference to military, historical, and geographical questions. The course is intended primarily as an introduction to the methods of the graduate seminar, and secondarily as a practical course for teachers. Open to Seniors. Walker.
- 61.—VERGIL. Three hours credit. A rapid survey of the contents of the *Æneid*, with a study of the motives of the poem and Vergil's method of handling his material. A critical study of a few passages which involve difficulties of interpretation or of textual criticism. It is recommended that this course be preceded or accompanied by course 52. Open to Seniors.

LAW.

The following courses in the School of Law are open to College Seniors who do not elect courses from other professional schools, but not more than fifteen hours may be counted towards the degree of bachelor of arts. Students desiring admission to any of these courses must register in the School of Law as well as in the College, and will be admitted to the classes as first-year law students.

- 51.—ELEMENTARY LAW. Two and one-half hours credit. First half of first semester.
- 52.—CRIMINAL LAW. Two and one-half hours credit. First half of first semester.
- 53.—AGENCY. Two and one-half hours credit. Second half of first semester.
- 54.—CONTRACTS. Five hours credit. First semester.
- 55.—BAILMENTS. Two and one-half hours credit. First half of second semester.
- 56.—TORTS. One hour credit. Second half of first semester; also, one and one-half hours, first half of second semester.
- 57.—SALES. Two and one-half hours credit. First half of second semester.
- 58.—DAMAGES. Two and one-half hours credit. Second half of second semester.
- 59.—DOMESTIC RELATIONS. Two and one-half hours credit. Second half of second semester.
- 60.—BILLS AND NOTES. Five hours credit. Second semester.
- 61.—SURETYSHIP. Two and one-half hours credit. Second half or second semester.

MATHEMATICS.

Professors: VAN DER VRIES* (Chairman of Department); ASHTON.
Associate Professors: MITCHELL, STOUTER.
Assistant Professors: JORDAN, WHEELER, LEFSCHETZ.
Instructors: MILLER, LARSEN.

EQUIPMENT. The department of mathematics has a good collection of models in wood, plaster of paris, and strings illustrating various theorems of geometry and analysis. The library contains about 2,000 volumes relating to mathematics. The department also has in its possession a large collection of elementary textbooks, which is of especial value to prospective teachers, affording an excellent opportunity for comparing various methods of presentation.

ADVICE AS TO CHOICE OF COURSES. The courses in the department are arranged to meet the needs of four classes of students, as follows: (1) those who wish to study mathematics for general culture; (2) those who wish to take mathematics in preparation for advanced work in other departments; (3) those who wish to become teachers of mathematics in secondary schools; (4) those who wish to specialize with a view to finding a career in teaching and research in mathematics. The courses are arranged in three groups; the elementary group, open to all undergraduates; a more advanced group, open to Juniors, Seniors, and graduate students; and the graduate courses, open only to graduate students. (For a list of the latter courses see the announcements of the Graduate School.)

(1) For general culture all or a part of courses 1 to 11 in proper sequence are recommended; they may be taken two at a time (*i. e.*, 2 and 3, 4 and 5, etc.)

(2) Students whose major work is in another department where mathematics is needed should consult with the head of the department in question regarding the mathematical courses they should elect.

Students in groups (3) and (4) will naturally major in the department.

MAJOR WORK. Under the general laws of the College, students majoring in this department must complete at least 30 hours of mathematics, of which at least 12 hours must be chosen from courses numbered 50 and above. Courses 2 to 7 are required of all students majoring in the department.

(3) Those wishing to qualify for teachers of mathematics in high schools must include in their major 11 and 62. They are also advised to take some courses in physics and astronomy.

(4) Students desiring to specialize in mathematics should take as many of the remaining courses offered as possible. Such students are advised to gain a reading knowledge of French and German as early in their courses as possible. Italian will also be a great help.

1. **SOLID GEOMETRY.** Two hours credit. Second semester, at 10, 11. The usual theorems and constructions of standard textbooks and applications to the mensuration of surfaces and solids. Open to all students who do not offer solid geometry for entrance. Jordan, Wheeler.

2a.—**COLLEGE ALGEBRA.** Three hours credit. First semester, 8, 10, 11, 1, 2; second semester, 8, 9, 10, 11, 1. Rapid review of elementary algebra; graphic representation; logarithms; determinants; theory of equations; Horner's method of approximation. Stoutter, Miller, Larsen.

2b.—**COLLEGE ALGEBRA.** Two hours credit. First semester, 9, 10; second semester, 8, 1. This differs from 2a only in giving less time to the theory of logarithms and the theory of equations. Mitchell, Miller.

* Absent on leave.

2c.—COLLEGE ALGEBRA. Five hours credit. Both semesters at 8. This section is intended for students who have entered with only one unit of algebra. It includes a thorough review of elementary algebra and as many of the subjects of 2a as possible. It may also be taken by students offering one and a half units of elementary algebra, but for such students it will give only three hours credit. Miller.

3a.—PLANE TRIGONOMETRY. Two hours credit. First semester, 8, 10, 11, 1, 2; second semester, 8, 9, 10, 11. The six trigonometric functions; principal formulas of plane trigonometry, trigonometric equation, solution of triangles, and practical problems. Must be preceded or accompanied by course 2a, 2b, or 2c. Stouffer, Miller, Larsen.

3b.—PLANE TRIGONOMETRY. Three hours credit. First semester, 9, 10; second semester, 8, 1. The same subjects as in 3a with the theory of logarithms and a short treatment of spherical trigonometry. Must be preceded or accompanied by course 2a, 2b, or 2c. Mitchell, Miller.

4.—ANALYTICAL GEOMETRY I. Two hours credit. First semester, at 10 and 11; second semester, at 8 and 10. The straight line, circle, elements of parabola, ellipse and hyperbola. Prerequisites, courses 2 and 3. Van der Vries, Stouffer, Larsen.

5.—CALCULUS I. Three hours credit. First semester, at 1; second semester, at 8 and 10. Differential calculus; fundamental principles; derivatives; applications to geometry and mechanics; maxima and minima; indeterminates. Open to students who have completed or are taking course 4. Van der Vries, Mitchell, Miller.

6.—ANALYTICAL GEOMETRY II. Two hours credit. First semester, at 11; second semester, at 9. Conic sections; polar coordinates; loci problems; higher plane curves. Prerequisite, course 4. Ashton, Miller.

7.—CALCULUS II. Three hours credit. First semester at 11; second semester, at 9. Integral calculus; integration; definite integrals; applications to lengths, areas, and volumes. Prerequisites, courses 5 and 6; may be taken at the same time with course 6. Mitchell, Stouffer.

9.—SOLID ANALYTICAL GEOMETRY.* Two hours credit. Second semester, at 9. Solid analytical geometry of the straight line, plane, and the conicoids. Prerequisite, course 7. Stouffer.

10.—MATHEMATICAL THEORY OF INVESTMENT.* Three hours credit. Second semester, at 11. This course will cover, first, the principles of infinite series as applied to annuities, etc., and the development of facility in logarithmic computation; second, the fundamentals of the theory of probability, with applications. Prerequisite, course 2. Van der Vries.

11.—THEORY OF EQUATIONS.* Three hours credit. Second semester, at 9. Algebraic solution of cubic and quartic, symmetric functions, transformations of equations, solutions of numerical equations in one variable, systems of equations, determinants and elimination. Open to students who have had course 7, and to others upon permission of the instructor. Mitchell.

50.—ANALYTIC MECHANICS. Three hours credit. Second semester, at 11. This course is recommended to those who desire a more thorough knowledge of the integral calculus and its practical applications. It will include center of gravity, moments of inertia, and the general theory of rectilinear and curvilinear motion in space. A large number of practical problems will be solved. Prerequisites, courses 2 to 7, and either 51 or physics 50. Van der Vries.

51.—DIFFERENTIAL EQUATIONS. Three hours credit. First semester, at 9. Ordinary differential equations; integration in series; partial differential equations; applications to geometry and physics. Prerequisites, courses 2 to 7. Van der Vries.

52.—ADVANCED CALCULUS. Three hours credit. First semester, at 10. Critical review of the fundamental notions of calculus; expansion in series; definite integrals; multiple integrals; line integrals; applications to geometry and physics. Prerequisites, courses 2 to 7. Ashton.

53.—ELLIPTIC INTEGRALS. Two hours credit. Second semester, at 10. Elliptic integrals; Jacobian elliptic functions; applications to geometry and physics. Prerequisites, courses 2 to 7. Ashton.

54.—ELEMENTARY NUMBER THEORY. Two hours credit. Second semester, at 8. Theory of divisibility, prime numbers, congruences, elements of theory of residues and of representation of a number by the simplest quadratic forms. Lefschetz.

55.—SERIES. Two hours credit. First semester, at 9. A study of selected topics in Fine's College Algebra. The idea of a number field; the development of the number system of algebra; definition of irrational number; fundamental theorems on limits; convergence of infinite series; power series; operations with infinite series; binominal, exponential and logarithmic series; infinite products. Prerequisites, courses 2 to 7. Mitchell.

57.—COMPLEX NUMBERS. Three hours credit. Second semester, at 10. Analytic and geometric properties of complex numbers; conditions of functionality; integration; circular transformation; applications. Prerequisite, course 55. Ashton.

59.—MODERN GEOMETRY I. Three hours credit. First semester, at 8. Fundamental forms; the principle of duality; perspectivity and projectivity between one-dimensional forms; one-dimensional coordinate systems; double ratio; linear transformations; involution; the harmonic properties of the complete quadrangle and quadrilateral. Prerequisites, courses 2 to 7. Stouffer.

60.—MODERN GEOMETRY II. Three hours credit. Second semester, at 8. Two-dimensional coordinates, projective and special, both point and line; pencils and ranges of conics; collineations and introduction to continuous groups of collineations in the plane. Prerequisite, course 59. Stouffer.

62.—HISTORY OF MATHEMATICS. Two hours credit. First semester, at 11. The historical development of elementary mathematics, including trigonometry, analytical geometry, and the calculus. Outlines, assigned readings, and class discussions. Open to Seniors who have had course 7. Mitchell.

MEDICINE.

College students who have attained at least full Senior standing and who have credit for certain subjects named below may offer in satisfaction of all or part of the requirements of the Senior year the entire first year of the medical curriculum. To such students the College will grant the degree of bachelor of arts.

College students who have attained at least full Junior standing and who have credit for certain subjects named below may offer in satisfaction of all or part of the requirements of the Junior and Senior years the entire first and second years of the medical curriculum. To such students the College will grant the degree of bachelor of science in medicine.

The subjects, or equivalents, which must have been completed before admission to the Medical School are:

Modern language, 10 hours, preferably, German 1 and 2.

Chemistry, 10 hours, including at least 1 and 2.

Physics, 1, 5a and 5b, or 6a and 6b.

Biology, which should include zoölogy 3, and at least one course from zoölogy 1, 2, or botany 3.

To secure this privilege of offering medical work towards the College degree, the student must have spent one full year in residence at the

College previous to enrollment in medical courses and must be certified to the Medical School by the Dean of the College as having met all the requirements above named. He must also register in the College as well as the Medical School and be subject to such general regulations of the College Faculty as govern other Juniors and Seniors.

A student who does not fully meet the entrance requirements to the Medical School will enroll in College classes necessary to complete such requirements, after which he may be admitted to the Medical School and enrolled in medical courses, but the aggregate number of hours of such enrollment in the two schools may not exceed that allowed to College students.

Whenever a student has completed the medical work in accordance with the foregoing provisions, the Dean of the Medical School will submit to the Dean of the College a certified statement of that fact accompanied by the recommendation of the Faculty of the School of Medicine that such student be admitted to the appropriate College degree. The student will then be named to the College Faculty as a candidate for that degree.

It should be noted that several of the courses embraced in the first three semesters of the medical curriculum are offered to College students in the various departments concerned.

MUSIC.

Professor: SKILTON.

Courses 50 and 51 are College courses and are open to all Juniors and Seniors.

Courses 52 to 60 are courses in the School of Fine Arts and are open to College Juniors and Seniors who do not elect courses from other professional schools, but not more than fifteen hours may be counted towards the degree of bachelor of arts. Students desiring admission to these courses must register in the School of Fine Arts as well as in the College, and will be admitted to the classes as fine arts students.

50.—APPRECIATION OF MUSIC. Two hours credit. First semester, at 10. A course for those who wish to learn to understand music as listeners without necessarily being performers. The different styles of music are explained and illustrated, with special reference to the University concerts. Skilton.

51.—DEVELOPMENT OF MUSIC. Two hours credit. Second semester, at 10. Detailed examination of famous composers, with reference to the history of their time and country. Skilton.

52.—HARMONY. Two hours credit.

53.—HARMONY. Two hours credit.

54.—HARMONY. Two hours credit.

55.—HARMONY. Two hours credit.

56.—COUNTERPOINT. One hour credit.

57.—COUNTERPOINT. One hour credit.

58.—MUSICAL COMPOSITION. One hour credit.

59.—MUSICAL COMPOSITION. One hour credit.

60.—INSTRUMENTATION. One hour credit.

PHARMACY.

Professors: SAYRE, NELSON.

50.—BIOLOGICAL CHEMISTRY. Four or six hours credit. Second semester. For description, see Pharmacy School.

51.—ADVANCED BIOLOGICAL CHEMISTRY. Two, three, or five hours credit. Both semesters. A continuation of course 50.

PHILOSOPHY AND PSYCHOLOGY.

Professors: TEMPLIN,* HOLLANDS (Chairman of Department); HUNTER.*
Associate Professor: DOCKERAY.*
Assistant Professor: MITCHELL.*
Instructors: PATERSON,* SHEPPARD, FARAGHER.

EQUIPMENT. This department occupies a suite in the east wing of the new Administration Building, including classrooms, a reading room held jointly with the mathematics department, and the psychological laboratory. The philosophical library includes some 3,500 volumes, 3,000 of which are on the shelves of the reading room for ready reference by students. The laboratory has twelve rooms equipped both for class work and research.

MAJOR REQUIREMENTS. All students majoring in the department will be required to take the following courses: 1a, 2a, 3, 50, 70, and 71. Other elections will be determined by the special interests and purposes of the student. When such an arrangement seems expedient, students may satisfy all or part of the requirements for the major in this group, so far as these exceed those for the department major, by the election of allied subjects in other departments. Such students must state, in entering upon their major, to which of the four topics following they wish to give especial attention: (1) General Philosophy; (2) Ethics; (3) Logic and Methodology; (4) Psychology. Their selection of allied subjects must be made from the corresponding group, as indicated below.

ALLIED SUBJECTS IN GROUPS.

General Philosophy. English 81, Browning and Tennyson; English 82, Carlye and Emerson; English 83, Milton and His Contemporaries; Greek 4, Plato; Greek 54, The Gorgias or Republic of Plato; Latin, 55, Lucretius; Mathematics 5, 7, Calculus I and II; Physics 5a, 5b, 6a, 6b, General Physics; Physics 50, Mechanics and Heat; Physics 51, Light and Radiant Energy; Physiology 70; Romance 56, French Literature of the Eighteenth Century; Romance 90, Dante; Zoölogy 4, Development and Heredity.

Ethics. Economics 70, 71, Labor Problems I and II; Economics 91, 92, Value, Price, and Distribution of Wealth; Economics 93, 94, Economic Theory; History and Political Science 80, Principles of Political Science; History and Political Science 83, International Law; Sociology 54, Public Opinion; Sociology 55, Psychological Sociology; Sociology 57, Socialism; Sociology 58, Anthropology; Sociology 59, Ethnology; Sociology 62, Development of Social Theory; Zoölogy 4, Development and Heredity.

Logic and Methodology. Economics 68, Statistics; Mathematics 5, 7, Calculus I and II; Mathematics 10, Probability and Statistics; Physics 5a, 5b, 6a, 6b, General Physics; Physics 50, Mechanics and Heat; Physics 51, Light and Radiant Energy.

Psychology. Anatomy 1, Introductory Anatomy; Anatomy 5, Neurology; Physics 5a, 5b, 6a, 6b, General Physics; Physics 51, Light and Radiant Energy; Physiology 70; Sociology 54, Public Opinion; Sociology 55, Psychological Sociology; Sociology 58, Anthropology; Sociology 59, Ethnology; Zoölogy 3, Comparative Anatomy; Zoölogy 4, Development and Heredity; Zoölogy 55, Embryology.

PSYCHOLOGY.

1a.—GENERAL PSYCHOLOGY.* Three hours credit. Both semesters, M. W., at 10 and 3, and third hour by appointment. A general survey of the fields of psychology, with a careful study of the field of normal human psychology. It is required for admission to other psychology

* Absent on leave.

courses and to the School of Education. Elementary courses in biological and physical sciences are valuable antecedents. It is recommended that 1b accompany this course. Hunter, Dockeray, and Paterson.

1b.—GENERAL PSYCHOLOGY LABORATORY.* Two hours credit. Both semesters, M. W., 8-10 or 1-3, or at the same hours Tu. Th. Experiments supplementary to 1a, which must accompany or precede this course. Dockeray, Paterson.

2a.—SENSORY PROCESSES AND FEELING.* Three hours credit. Second semester, 11. This is a foundation course and should be taken immediately after 1a and 1b by those planning to major in psychology. Dockeray.

2b.—SENSORY PROCESSES AND FEELING LABORATORY.* Two hours credit. Second semester, Tu. Th., 10-12. Experiments supplementary to 2a, which must accompany or precede this course. Dockeray.

50.—ATTENTION, LEARNING, AND THOUGHT. Three hours credit. First semester, 11. Courses 1b and 2a are recommended as antecedents. Hunter.

51.—ANIMAL BEHAVIOR. Three hours credit. First semester, 9. Vertebrate behavior is emphasized. The topics discussed are: Tropisms, instincts, sensory discrimination, and higher capacities. Hunter.

52.—ABNORMAL PSYCHOLOGY. Three hours credit. Second semester, 9. A study of the subconscious in both the normal and the abnormal. Particular attention will also be given to hysteria and disintegrated personality. Dockeray.

53.—CHILD PSYCHOLOGY. Two hours credit. First semester, 8. The mental development of the child in the preadolescent period. Dockeray.

54.—INDIVIDUAL PSYCHOLOGY. Three hours credit. First semester, 8. A consideration of specific capacities, "general intelligence," sex differences, special defects, and the relation between individual differences and social status. Paterson.

55.—SOCIAL PSYCHOLOGY. Three hours credit. Second semester, 9. Social instincts and emotions, the psychology of social influence, and the self. Given in alternate years with course 56. (Given in 1917-'18.) Hunter.

56.—INSTINCT AND EMOTION. Three hours credit. Second semester, 9. An examination of the fundamental modes of acting and feeling. Given in alternate years with course 55. (Not given in 1917-'18.) Hunter.

57.—PSYCHOLOGICAL ÆSTHETICS. Two hours credit. Second semester, 9. The analysis of the beautiful and the comic. Special consideration is given to rhythm, melody, and harmony. This course should be preceded by course 1a, but is open without prerequisites to students in the School of Fine Arts. Hunter.

67.—PRINCIPLES OF PSYCHOLOGY. Three hours credit. Second semester, at 11. A consideration of the history and problems of psychology. Prerequisites, courses 1a, 2a and 50. Hunter.

68.—ADVANCED PSYCHOLOGY I. Two to five hours credit. First semester by appointment. This course provides for the individual study of special topics by advanced students. The subject will be determined by the desires of the students. Hunter, Dockeray, Paterson.

69.—ADVANCED PSYCHOLOGY II. Two to five hours credit. Second semester by appointment. A continuation of course 68, but not necessarily preceded by it. Hunter, Dockeray, Paterson.

PHILOSOPHY.

10.—ELEMENTARY LOGIC.* Three hours credit. Both semesters, at 9. Textbook course for beginners, presenting the elementary principles of deduction, induction, and circumstantial evidence. (N. B.—This course is open to first-year students who are to begin work in law in their Sophomore year.) Hollands.

11.—INTRODUCTION TO PHILOSOPHY.* Two hours credit. Both semesters, at 10. Textbook course for beginners, presenting the general nature of philosophical problems and of the relation of philosophy to science, religion and art. Should be preceded by elementary courses in the biological and physical sciences. Hollands.

70.—HISTORY OF PHILOSOPHY I. Three hours credit. First semester, at 10. The development of philosophy in its relations to general culture, scientific theory, education, politics, and religion, as well as in its more strictly metaphysical aspects. The work of the first term will ordinarily cover ancient philosophy from Thales to Plotinus, with special reference to Plato and Aristotle. This course has no prerequisites in the department, but is a natural sequel to the Sophomore courses. Hollands.

71.—HISTORY OF PHILOSOPHY II. Three hours credit. Second semester, at 10. A continuation of course 70, but not necessarily preceded by it; continuous election is advisable. Mediæval and modern philosophy, from St. Augustine to the present. Hollands.

72.—PHILOSOPHICAL CLASSICS I. Two hours credit. First semester, at 10. This course furnishes an opportunity for the study of some of the works important in the history of philosophy. The authors read vary with succeeding terms. Must be preceded or accompanied by course 70, which it is intended to supplement. Hollands.

73.—PHILOSOPHICAL CLASSICS II. Two hours credit. Second semester, at 10. A continuation of course 72. Must be accompanied or preceded by course 71, which it supplements. Hollands.

74.—THE THEORY OF KNOWLEDGE. Three hours credit. First semester, at 11. The subject of the course is the problem of truth, with special reference to contemporary idealism, pragmatism, and realism. Prerequisite, courses 1a, 3, and 70, 71. Hollands.

75.—METAPHYSICS. Three hours credit. Second semester, at 11. Some typical tendencies and problems of contemporary thought will be examined and discussed in connection with the positive development of the subject. Prerequisites, courses 70, 71. Hollands.

76.—THE PHILOSOPHY OF RELIGION. Two hours credit. Second semester, at 10. After a preliminary examination of some of the theories concerning the origin and development of religion, in connection with the anthropological and psychological data, this course will consider some of the problems common to religion and philosophy. Prerequisites, courses 1a, and either 4, 70 or 71. (Alternates with 75.) Hollands.

77.—ADVANCED LOGIC. Three hours credit. Second semester, at 1. A sequel to course 3, with attention to some of the philosophical aspects and problems of logic. Considerable outside reading is required. Prerequisite, course 3.

80.—SYSTEMATIC ETHICS. Three hours credit. First semester, at 11. This course undertakes a critical examination into the psychological sources of human conduct, a review of the historic ethical theories, and the development of a satisfactory ethical system. Prerequisites, courses 1a, and either 4, 70, or 71. Templin.

81.—PRACTICAL ETHICS. Two hours credit. Second semester, at 9. The application of theoretical principles of conduct to practical problems of life. Prerequisite, course 80. Templin.

POLITICAL SCIENCE.

*Professor: DYKSTRA.**Associate Professor: MOORE.*

EQUIPMENT. Instruction in this department is conducted by informal lectures, class discussions, the use of textbooks and the University library, and by investigations in and observation of the actual workings of government. The library is adequately equipped for all ordinary work done by undergraduates and also permits a limited amount of special research and investigation. The sets for the study of Kansas government and that of the United States are complete, and the library receives the scientific journals published in the field of government and politics. The collections of the department of history, economics and sociology are in constant use by students of political science.

ADVICE AS TO COURSES. It is necessary for all students who are going to major in this department to elect first of all the general course in American Government. This course should be followed by Municipal Government in order to fill out the student's general knowledge of the American system. The advanced courses fall into three general divisions: descriptive politics, law and international relations, and political theory. Major students in the department are requested to confer with the instructor about the sequence of courses. The study of politics is of importance in three general directions. For the student who does not wish to specialize in political science the work in this department is designed to give the general comprehensive knowledge of government, particularly American government, which is essential to every citizen in a democracy. In the second place, students in related fields, as, for example, those who are going to specialize in law, find that a knowledge of the organization and administration of government is almost indispensable. Students of journalism are being urged to prepare themselves for sane political writing by taking courses in political science. Since civics is now taught extensively in the high schools preparation of teachers in this field is quite necessary. In the third place the public service is calling for trained men.

TRAINING FOR PUBLIC SERVICE. The professionalizing of many government positions in the civil service and the demand for trained men in state and municipal service is giving a new importance to all of the social sciences. This demand will increase as the public service grows in interest and in importance. The Great War has enormously quickened the progress in this direction. This department is coöperating with the departments of economics and sociology in working out a thorough-going scheme of courses which will aim to prepare students for the public service, and for positions with quasi-public organizations, such as city clubs, chambers of commerce, bureaus of municipal research, and legislative reference bureaus. Students desiring to enter any of these specialized fields should consult the department faculty not later than the beginning of the Junior year.

10.—**AMERICAN GOVERNMENT.*** Five hours credit. First semester, at 8, 9, and 10. A systematic study of the development and structure of American government, national and state, with emphasis upon actual workings.
Dykstra, Moore.

51.—**MUNICIPAL GOVERNMENT.** Three hours credit. Second semester, at 9. A study of the government of the American city, its development and structure, its relation to the state, the various types of organization, and the participation of the people in city affairs. Comparisons between American and European cities in form and function are drawn in an attempt to assess American municipal progress. Prerequisite, course 10, or an equivalent.
Dykstra.

52.—MUNICIPAL ADMINISTRATION. Three hours credit. First semester, at 11. The functions and administration of the city, particularly the American city. Such topics as the following will be discussed: Streets and city planning, the utility problems of light, water, lighting and transportation, fire protection, municipal finance, school and police administration. Prerequisite, course 51. Dykstra.

53.—AMERICAN STATE GOVERNMENT. Two hours credit. Second semester, at 11. The original principles of state government in the United States, the development of state constitutions, the problems of modern state government, and an analysis of the various projects for reorganization and reform. Prerequisite, course 10, or an equivalent. Dykstra.

54.—EUROPEAN GOVERNMENT. Three hours credit. First semester, at 11. An examination of the constitutions and political systems of the leading European states, with emphasis upon recent changes made by the war. Prerequisite, course 10 or an equivalent. (Not given in 1918-'19.) Dykstra.

55.—THE JUDICIARY. Two hours credit. Second semester. A study of the organization and jurisdiction of the judiciary. Special attention will be given to the development of the courts, their power to declare statutes unconstitutional, their importance in the American government, and their influence in the field of social and economic legislation. Prerequisite, course 10 or an equivalent. Moore.

56.—POLITICAL PARTIES. Two hours credit. First semester, at 11. The place of the party system in democratic government; the organization and development of party machinery; party abuses and the attempt to subject parties to popular control. Prerequisite, course 10 or an equivalent. Dykstra.

61.—INTERNATIONAL LAW. Three hours credit. First semester, at 9. A statement of the principles of international public law, including the Hague conventions; also a study of the settlement of international disputes by organized peaceful means. A liberal use of cases and official documents is made. Prerequisite, course 10 or an equivalent. Moore.

62.—ELEMENTARY LAW. Three hours credit. Second semester, at 10. A study of the fundamental principles of the common law, designed to give familiarity with common legal terms and court procedure, and emphasizing such subjects as torts, contracts, real and personal property. Prerequisite, course 10 or an equivalent. Moore.

71.—PRINCIPLES OF POLITICAL SCIENCE. Three hours credit. First semester, at 9. The fundamental principles of political science and the part they have played in the practice of the modern state, together with a critical examination of the theories of sovereignty, nationalism, the nature of the state and state purpose. An attempt is made in this course to find a reasonable basis for the existing state organization and its activities. Prerequisite, five hours of political science. Dykstra.

72.—HISTORY OF POLITICAL THEORIES. Two hours credit. Second semester, by appointment. A brief review of ancient and mediæval political philosophy, followed by a study of modern English and continental political theories. A short time is given to the consideration of typical American theory. Prerequisite, eight hours of political science. Seniors may enroll by permission of the instructor. Dykstra.

PUBLIC SPEAKING.

Professor: MACMURRAY (Head of Department).
Instructors: HILL, PARKER.

EQUIPMENT. The special equipment of this department includes a collection of more than 200 books, to which carefully selected modern works dealing with debating and public addresses are added yearly. Through

the courtesy of the Dean of the School of Law, rooms in Green Hall have been specially fitted for the work in public speaking, and the University chapel and other rooms are available for class recitations and individual practice. Moreover, the students in this department are urged to make constant use of books in the English, history, political science, economics, sociology, education, and other collections, as well as of the various current periodicals.

ADVICE AS TO CHOICE OF COURSES. The courses here offered are carefully articulated units, and are so arranged as to make possible a systematic study of public speaking. Students fitting themselves for the law or the ministry, for politics or social service, are urged to elect the entire series of courses offered. The University of Kansas participates in debates with the Universities of Nebraska, Oklahoma, Colorado, and Missouri. For these contests the courses in public speaking are designed to give preparation. Men desiring to win places on intercollegiate debating teams are advised to take as much of the work as possible, but especially to take course 52. The course in the principles of argumentation formerly given by this department has been transferred to the department of English, and may now be taken as course 3 in rhetoric. While it is not made a prerequisite, it is strongly advised as a preparation to course 52 in debating. In fact, students who have not had the course in argumentation must be able to satisfy this department in some other way of their preparation for course 52 in debating.

To facilitate the work of the courses in dramatic art, a small but neat and practical stage has been fitted up in room 3, Green Hall. In addition to the regular class work the rehearsals for class and dramatic club plays are held in this room.

1.—**ORAL INTERPRETATION I.*** Two hours credit. Both semesters. First semester, two sections, Tu. Th., at 8; M. W., at 10. The purpose of this course is to enable the student to attain to some proficiency in the art of oral interpretation of literature. In connection with the practice work upon the platform, the student will be given such points of theory as are necessary in regard to the development and use of the voice and in regard to proper platform deportment.

MacMurray, Hill, Parker.

2.—**ORAL INTERPRETATION II.*** Two hours credit. Both semesters. Tu. Th., at 9; M. W., at 8. This course will be a continuation of course 1, and will afford a more advanced study of the art of oral interpretation. Prerequisite, course 1.

MacMurray, Hill, Parker.

50.—**EXTEMPORE SPEAKING I.** Two hours credit. Both semesters. First semester, three sections; Tu. Th., at 10; M. W., at 11; T. Th., at 2. Weekly addresses based on prepared outlines. Careful preparation of material is required; the plan of the speech is made in advance, but the choice of language is left for the moment of speaking.

MacMurray, Hill, Parker.

51.—**EXTEMPORE SPEAKING II.** Two hours credit. Both semesters. Tu. Th., at 11; M. W., at 9. A continuation of extempore speaking I; same methods, but work is of more advanced nature. Lectures by head of department, and attention given to solution of special problems in public speaking. Prerequisite, course 50.

MacMurray.

52.—**DEBATING I.** Two hours credit. First semester, two sections; M., 3 to 5; Tu., 3 to 5. Practical work in brief drawing and the handling of evidence, together with presentation in actual debate. The class is limited in number, and the course can be taken only with the consent of the instructor. It is recommended that course 3 in rhetoric be taken before or in connection with this course.

53.—**DEBATING II.** Two hours credit. Second semester, by appointment. This course is open only to members of the University Debating

Squad, and consists in preparation for the University Intercollegiate Debates.

54.—ADVANCED PUBLIC SPEAKING. Two hours credit. Second semester, M. W., at 11. In addition to the regular class instruction, special instruction will be given in preparing lectures and recitals for the public platform. A carefully prepared production of some length will be required of each student by the end of the semester. Prerequisites, courses 1 and 2. MacMurray.

60.—DRAMATIC ART I. Two hours credit. First semester, M., 3 to 5. Training in the interpretation of the drama and instruction in stage technique. Standard and classic plays will be studied and presented, and each student will be assigned definite roles to interpret. Prerequisite, course 1 or its equivalent. MacMurray.

61.—DRAMATIC ART II. Two hours credit. Second semester, M., 3 to 5. A continuation of course 60. The work will be similar in character but of a more advanced nature. Prerequisite, course 60. MacMurray.

PHYSICS AND ASTRONOMY.

Professor: KESTER.

Associate Professor: RICE.

Assistant Professors: STIMPSON, SMITH,* ALTER.*

Instructor: WHITEMORE.*

EQUIPMENT. The department occupies Blake Hall. The lecture rooms, laboratory and research rooms of the building are well supplied with water and gas and with various electrical circuits; the laboratory and research rooms are provided with piers free from vibration. A well-equipped shop and the services of an instrument maker are available for the construction of apparatus needed for special work. The equipment of apparatus for demonstration and regular laboratory work and for special investigation is good and is being increased constantly by well-chosen additions.

The physics library contains a fine collection of standard treatises, both elementary and advanced. American, English, German, French and Italian journals of the science are at hand, with bound volumes for from twenty-five to forty years; the files of the more important journals have been extended back from seventy to ninety years. The published transactions and proceedings of a large number of the important physical societies of the world add notably to the value of the library for use in special fields of investigation.

The material equipment in astronomy consists of a six-inch telescope, made by Alvin Clark & Sons, on a portable equatorial tripod mounting; an equatorial clock-drive and a micrometer eye-piece have been purchased for this telescope; a two-inch terrestrial telescope on a portable altazimuth mounting; one two-inch and one three-inch transit instrument; a sextant; a spectroscope for attachment to the six-inch telescope; a fine comparator for photographic plate measurements; two chronometers, one a break-circuit instrument; a chronograph; a twenty-inch celestial globe; 600 astronomical slides; star charts, atlases, maps, drawings, etc. In addition, the equipment in physics is available for demonstrations and for laboratory work.

The astronomical library contains about 600 volumes, including some of the more important journals of the science.

ADVICE AS TO CHOICE OF COURSES. *Physics.*—The courses in physics are arranged to give, first, a general survey of the whole subject in the elementary and general courses (1, and 5 and 6); second, a more intensive study of the well-defined fundamental parts of the science in the courses 50 to 53 (with appropriate laboratory courses 55 to 57); and

* Absent on leave.

third, an opportunity to enter the more special fields in the courses 58 to 61. Courses 1 (elementary physics) and 5 and 6 (general physics), or their equivalents, are necessary for enrollment in any other course in physics. It is necessary that course 5 precede course 6. They are open to all students of the College. Courses 50 to 64 are open to Juniors and Seniors and to graduate students. Courses 50, 51, 52, and 53, with accompanying laboratory courses, should all be taken by students making physics their major, and courses 58, 60, and 61 may be added. Courses 53, 58 and 60 do not presuppose the calculus. Students expecting to do advanced work in physics should obtain as early as practicable a working knowledge of the calculus. A reading knowledge of German and French is desirable for those who elect the advanced courses and is essential for graduates. Members of the department are glad to confer with students who intend to major in physics, and with those who intend to teach this science in high schools, as to the choice of courses best adapted to their needs.

Astronomy.—Students wishing only a general knowledge of the subject are advised to begin with astronomy 10 and 11, and to follow these, if possible, with courses 80 and 81. The courses 80 to 86 are designed for those who wish to make astronomy a major study. The courses following 81 should be preceded either by 80 and 81, or by 1, and should be taken in order, with the exception of 84, which may be taken at any time, subject to the necessary prerequisites.

PHYSICS.

1.—THE DEVELOPMENT OF PHYSICS, INCLUDING RECENT ADVANCES. Five hours credit. First semester, M. W. F., 9; Tu. Th., 8 to 10; lectures, recitations, and laboratory work. A topical survey, the arrangement of topics such as to trace the development of methods and the growth of fundamental ideas. Considerable attention will be given to recent tendencies. (The course does not duplicate high-school physics. It may not be counted in fulfillment of entrance requirements of the School of Medicine.) Prerequisite, plane geometry. Laboratory fee, \$1. Kester.

5a.—GENERAL PHYSICS I. Mechanics, sound and heat. Three hours credit. First semester, at 11. Lectures, recitations, problems. Prerequisites, elementary physics, or physics 1, or elementary chemistry, and plane trigonometry. Course 5a should be accompanied by 5b. Kester.

5b.—GENERAL PHYSICS LABORATORY I. Mechanics, sound, and heat. Two hours credit. First semester, S., 8 to 12. Accompanied by or preceded by 5a. Fee, \$1.50. Stimpson.

6a.—GENERAL PHYSICS II. Light and electricity. Three hours credit. Second semester, at 11. A continuation of course 5. Prerequisite, course 5. Course 6a should be accompanied by 6b. Kester.

6b.—GENERAL PHYSICS LABORATORY II. Light and electricity. Two hours credit. Second semester, S., 8 to 12. Coördinate with 6a, with the same prerequisites. Course 6b must be accompanied or preceded by 6a. Fee, \$1.50. Stimpson.

50.—MECHANICS AND HEAT. Three hours credit. First semester, at 8. Lectures and recitations. Prerequisites, a year's work in general physics, and calculus. Kester.

It is recommended that this course be followed by Mathematics 50, Analytical Mechanics, three hours, second semester.

51.—LIGHT AND RADIANT ENERGY. Three hours credit. Second semester, at 8. Prerequisites, a year's work in general physics, and calculus. Offered in alternate years. (Not offered in 1918-'19.) Smith.

52.—ELECTRICITY. Three hours credit. First semester, at 8. Lectures, recitations, and problems. Prerequisites, a year's work in general physics, and calculus. Rice.

53.—CONDUCTION OF ELECTRICITY THROUGH GASES. Three hours credit. Second semester, at 9. Prerequisite, a year's work in general physics. Offered in alternate years. Kester.

Courses 50, 51, 52, and 53 are designed to form a two-year cycle for theoretical treatment of the essentials of the subject matter of physics. The cycle is offered especially for Juniors and Seniors who are taking their major in physics. Either year of it is acceptable as a minor for graduate students who are working for the master's degree with their major in another department. An opportunity is offered in the laboratory courses 55 to 57 for experimental work which shall supplement to any desired extent the theoretical development of a given branch of the subject.

54.—PRINCIPLES OF ELECTRIC WAVE TELEGRAPHY. Three hours credit. First semester, by appointment. A study of the fundamentals of wireless telegraphy. Prerequisite, a course in general physics. Some use is also made of calculus. (Not offered in 1918-'19.) Whittemore.

55.—PHYSICAL LABORATORY. Light and radiant energy. Two to five hours credit. Second semester, by appointment. Prerequisite, a year's work in general physics. Fee, \$1.50 to \$3.00. Smith.

56.—PHYSICS LABORATORY. Electricity. Two to five hours credit. Both semesters, by appointment. Prerequisite, a year's work in general physics. Fee, \$1.50 to \$3. Rice.

57.—PHYSICS LABORATORY. Conduction of electricity through gases, and radioactivity. Two or three hours credit, second semester, by appointment. Prerequisite, course 53 or equivalent. Fee, \$1.50 or \$2. Kester.

Courses 54, 55, 56, 57 are coördinate with 50, 51, 52, 53, with the same prerequisites, and supplement them from an experimental point of view.

58.—TEMPERATURE CONTROL AND MEASUREMENT. Three hours credit. Second semester, Tu., at 8; Th., 8 to 10; S., 8 to 11. This course will treat the subjects of the maintenance of constant temperatures, high and low; the various methods of measuring temperatures and of standardizing instruments, such as the platinum resistance thermometer, the thermo-electric couple, the pyrometer. Offered in alternate years. (Not offered in 1918-'19.) Fee, \$2. Kester.

59.—ELECTRIC WAVE TELEGRAPHY LABORATORY. Two to four hours credit. First semester by appointment. Must be preceded by or accompany course 54. An experimental study of the production of oscillations, measurement of the quantities involved and methods of reception in wireless telegraphy. (Not offered in 1918-'19.) Whittemore.

60.—OPTICAL INSTRUMENTS. Three hours credit. Second semester, at 8. This course is coördinate with 51, treating the theory of light only in so far as it relates to applied optics. Offered in alternate years. Smith.

61.—ALTERNATING AND OSCILLATING CURRENTS. Three hours credit. Second semester, by appointment. Lectures, recitations, and problems. A continuation of course 52, dealing with the mathematical theory of alternating and oscillating currents and the propagation of varying electric currents in wires. Prerequisites, course 52 and some work in course 56, or equivalent, and a good working knowledge of calculus. Offered in alternate years. (Not offered in 1918-'19.) Rice.

63.—PHYSICS COLLOQUIUM I. One hour credit. First semester, by appointment. The members and the advanced students of the department meet once a week to report on researches published in the journals of the science and on the progress of original investigations carried on by members of the colloquium.

64.—PHYSICS COLLOQUIUM II. One hour credit. Second semester, by appointment. A continuation of course 63.

ASTRONOMY

10.—DESCRIPTIVE ASTRONOMY. Three hours credit. Both semesters, at 9. An elementary course serving as an introduction to the subject. (Not offered in 1918-'19.)

11.—OBSERVATIONAL ASTRONOMY.* Two hours credit. First semester. Stress is laid on methods which may be carried on without the aid of large instruments, and which can be continued by the student independently. Prerequisite, trigonometry and astronomy 10. One evening and one afternoon a week. (Not offered in 1918-'19.)

80.—GENERAL ASTRONOMY I. Three hours credit. First semester, at 10. A comprehensive treatment of the subject, based on Young's General Astronomy, supplemented by reference to current astronomical literature. Prerequisites, elementary trigonometry and physics. (Not offered in 1918-'19.)

81.—GENERAL ASTRONOMY II. Three hours credit. Second semester, at 10. A continuation of 80. (Not offered in 1918-'19.)

82.—SPHERICAL AND PRACTICAL ASTRONOMY I. Two hours credit. One lecture and one laboratory period during the first semester, by appointment. Transformation of coördinates, time, sextant, transit, refraction. Prerequisites, descriptive astronomy, trigonometry, and calculus. (Not offered in 1918-'19.)

83.—SPHERICAL AND PRACTICAL ASTRONOMY II. Three hours credit. One lecture and one laboratory period during the second semester, by appointment. A continuation of 82. (Not offered in 1918-'19.)

84.—INTRODUCTION TO ASTROPHYSICS. Three hours credit. First semester, by appointment. A study of the principles, methods and instruments employed in investigating the physical conditions of celestial bodies. Prerequisites, astronomy 10, physics 5 and 6 or equivalent, and the calculus. (Not offered in 1918-'19.)

85.—THEORETICAL ASTRONOMY. Three hours credit. Second semester, by appointment. Methods of computing the orbits of planets and comets. Prerequisites, astronomy 10, and the calculus. (Not offered in 1918-'19.)

86.—PRACTICAL WORK IN COMPUTING. Two hours credit. To be taken in conjunction with 85. (Not offered in 1918-'19.)

PHYSICAL EDUCATION AND HEALTH.

Professors: HAMILTON (Head of Department), SUNDWALL.

Associate Professor: SHERBON.

Assistant Professor: BRIGGS.

Instructors: BOND, PRATT, MIX, COLE.

Assistant Instructors: BACON, JENSEN, COOK.

Secretary: MRS. STRICKLER.

Hospital Staff: MISS HAIGHT, MISS NOBLE.

This department is in process of reorganization.

For equipment reference is made to Section XII of the Catalog.

ADVICE AS TO CHOICE OF COURSES. The courses listed as exercises are designed primarily to secure health, recreation, and physical skill.

Course 20 is intended to teach the best methods of keeping the body at its highest efficiency, and of caring for it in emergencies.

Courses 50-58 are designed for the training of those who wish to become physical directors, coaches, managers, or any combination of these. Those looking forward to this work should take, in their Freshman and Sophomore years, at least one course in each of the following: anatomy, physiology, physics, chemistry, and psychology.

Every student is required to engage in the physical exercise designated by the proper authority of the University as suitable to his personal needs as shown by a physical examination. Required work is arranged

on the basis of five hours per week for men and four hours per week for women.

All claims for exemption from the above requirement must be made on blanks furnished by the physical education department and must be filed with the exemption Board at the beginning of each semester.

HEALTH.

The University health service has been established for the purpose of safeguarding the health of the students. To accomplish this, its activities are carried on along three general lines: education, through lectures, publications, and exhibits; sanitation, supervising the students' environment both on and off the campus; and personal examination and advice.

Thorough physical examinations will be made of all students entering the University. The result of each examination is recorded and serves as a basis for determining the nature of exercise which the department of physical examination will assign to the student. Whenever physical defects are found, suitable corrective exercises will be advised.

The University health service maintains two hospitals. One is a general hospital and dispensary, well equipped, and is open to all students for general consultation, advice, and treatment. The other is used for communicable cases, where isolation is required.

The University health service, in conjunction with the department of physical education, has the following objects in view:

1. The maintenance of the highest degree of health among the students.
2. The reclamation of physical defects so far as it is possible, and proper advice to those who possess irremedial defects.
3. The harmonious and symmetrical development of the body and its functions—the Greek ideal.

All Freshmen are required to take hygiene lectures (course 20) 1 hour per week, at 4 o'clock. This to count as substitute for one hour of exercise.

PHYSICAL EDUCATION FOR MEN.

Men physically sound will be allowed to select, in most cases, the kind of work they will take for required exercise from the following list of work given. Enrollment, however, must be made for a full semester, and changes in enrollment will not be made except for the very best of reasons.

General Electives.

MILITARY DRILL, 2 and 4 o'clock.

GYMNASIUM WORK, 10, 11, 2, 3, 4 o'clock.

TRACK WORK, 4 o'clock.

CROSS COUNTRY, 4 o'clock.

FOOTBALL, 4 o'clock. Both semesters.

BASEBALL, 4 o'clock. Second semester only.

BASKET BALL, 7 o'clock. First semester.

SPECIAL PRESCRIPTION WORK, by appointment. (For those physically disabled, or whose school work does not permit taking above.)

For any further information, call at the office, room 105, Robinson Gymnasium.

PHYSICAL EDUCATION FOR WOMEN.

The health of women students is at all times under the supervision of a woman physician, who may be consulted in the forenoon at the students' hospital and in the afternoon at the Gymnasium.

Every woman student is given a thorough physical examination on entrance, at which time inquiry is made as to previous illness and general physical history. Advice is given as to amount and kind of exercise, also diet and general personal hygiene, especially in cases where under-nutrition exists or other metabolic disorders.

Where physical conditions contra-indicate regular gymnasium courses, special work is prescribed under an instructor in corrective and special gymnastics. Students presenting physical defects such as spinal curvature, defective arches, bad posture, defective breathing, poor chest development, etc., are also placed in charge of this special instructor, who gives individual work directed toward the correction of particular conditions.

There is a large rest and silence room in the gymnasium, where students exhibiting symptoms of fatigue and exhaustion may rest instead of exercise. Definite hours of rest are prescribed and substituted for exercise when the welfare of the student so requires.

COURSES OF EXERCISE.

Advanced students may elect any of the forms of exercise in which they are particularly interested.

EXERCISE 1.** First semester, M. W. F., at 11, 2. Calisthenics, wands, dumb-bells, pulley weights, elastic exercises, folk dances and gymnastic games.

EXERCISE 2.** Second semester, M. W. F., at 11, 2. Continuation of course 1. Prerequisite, course 1, or its equivalent.

EXERCISE 3. First semester, Tu. Th., 11, 2, 3. Swedish gymnastics, folk dancing, esthetic and rhythmical exercises; Indian clubs. Prerequisite, course 2. Required of Sophomores.

EXERCISE 4. Second semester, Tu. Th., at 11, 2. A continuation of course 3. Prerequisite, course 3. Required of Sophomores.

EXERCISE 5. First semester daily, at 3. Advanced gymnastics, heavy apparatus, Swedish work, and games. Prerequisites, courses 1 to 4, or their equivalents.

EXERCISE 6. Second semester, daily, at 3. A continuation of course 5.

EXERCISE 7. Both semesters, daily at 11 or 2. Corrective gymnastics, arranged for those students who need special forms of exercise for correction of bodily defects.

EXERCISE 8. ESTHETIC DANCING. Both semesters.

1. Elementary Dancing. First semester, Tu. Th., at 4.
2. Elementary Dancing. Second semester, M. W. F., at 4.
Prerequisite, one year of physical exercise.
3. Advanced Dancing. First semester, M. W. F., at 4.
4. Advanced Dancing. Second semester, Tu. Th., at 4.
Prerequisite, Dancing 1 and 2, or its equivalent.

CROSS-COUNTRY HIKING. Both semesters, daily at 4.

SWIMMING. The swimming pool is used by the women students on Monday and Thursday from 10:30 to 12:30; and from 2:30 to 5:30. All students are advised to learn to swim.

BASEBALL. Second semester. Practice on South Field, daily, at 4.

BASKETBALL. Regular Practice is held daily, at 3, but organized teams may play at any time when the floor is unoccupied.

TENNIS. There are five courts on South Field reserved for the Women students.

FIELD HOCKEY. Class and other teams may be organized, and have regular hours for practice on South Field. Hockey sticks and balls are provided by the University.

Other games may be played whenever the field is unoccupied and when groups of students select a time.

CREDIT COURSES.

50.—KINESIOLOGY. Three hours credit. First semester, 8:30 to 10:30. A study of the human body as a mechanism; the muscles demanded and developed by exercise; muscles required in different forms of athletics; corrective exercises; massage. Prerequisite, elementary anatomy.

Sundwall.

51.—PHYSIOLOGY OF EXERCISE. Two hours credit. Second semester, 1. A study of the effects of exercise on the various systems of the body; effect of strain; feats of endurance; hygienic and recreative exercises; methods of development. Prerequisite, physiology 1. Sherbon.

52.—ANTHROPOMETRY. Two hours credit. Second semester, 8. Physical, functional, and medical examination; tabulation and the use of the data of examination; the making of charts and diagrams and their use. Should be preceded by anatomy I and physiology I.

Sundwall, Sherbon.

55.—PRINCIPLES OF GYMNASTICS I. Two hours credit. First semester, M. W. F., 9. A study of the systems of physical education—German, Swedish, French, and English. The development of modern gymnastics and their application to school and colleges; analysis of exercises and drills. Prerequisite, Freshmen and Sophomore courses; should also be preceded by 50, 51, and 52.

Mix.

56.—PRINCIPLES OF GYMNASTICS II. Two hours credit. Second semester, M. W. F., 9. A continuation of course 55, and must be preceded by it.

Mix.

57.—PRINCIPLES OF RECREATIVE SPORTS I. Two hours credit. First semester, Tu. Th., 9. A study of festivals and games, ancient and modern; their place and value; their classification. Methods of conducting recreative games, sports, and play festivals; playground technic. Should be preceded by 50, 51, and 52.

Pratt.

58.—PRINCIPLES OF RECREATIVE SPORTS II. Two hours credit. Second semesters, Tu. Th., 9. A continuation of course 57, and should be preceded by it.

Pratt.

59.—PHYSICAL DEVELOPMENT OF THE CHILD AND PHYSICAL EXAMINATION TECHNIQUE. Three hours credit. Second semester, M. W. F. A study of the physical growth and development of the child. Review of modern physical examination movement, technique of measurement, charting, physical inspection, demonstration of examination of children of the various ages studied.

Sherbon.

20.—HYGIENE. One hour credit. Required of all Freshmen, men and women. For men, weekly lecture, first semester, Th., at 4 o'clock; for women, daily lectures, first month.

Sundwall, Sherbon.

MILITARY SCIENCE.

I.—An elementary course in theoretical study of fundamental army manuals for recommended noncommissioned officers, and especially fit enlisted men of the regiment. Texts: Infantry Drill Regulations; Field Service Regulations; Small Arms Firing Manual; Manual of Interior Guard Duties; Principles of Military Courtesy; and "What a Soldier Should Know," Major Boles. Tu. Th., at 3. Two hours credit.

Captains Jones and Upham.

II.—An advanced course in military science and the art of war (theoretical): (a) Rapid review of army manuals; (b) United States army regulations and manual of courts-martial; (c) Minor problems for infantry (B. Jornstadt); (d) Military courtesy, military map reading, and making war games, etc., as time will permit; (e) assistance with work of military scout. Tu. Th., at 8. Two hours credit. Course I required as prerequisite.

Briggs.

PHYSIOLOGY.

Professors: HYDE, STOLAND (Chairman of Department).
Instructors: WALLING, MILLS.

EQUIPMENT. The department occupies the second floor of the Journalism Building, one room in Fraser Hall, and laboratory and office rooms on the second floor of Snow Hall. The laboratory and research rooms are well equipped with suitable tables and supplied with water and gas. The equipment of apparatus, glassware and chemicals is adequate for ordinary demonstrations and laboratory work in general physiology, and for some lines of research. The department library contains the more important reference books and complete files of the leading physiological journals.

ADVICE AS TO CHOICE OF COURSES. Physiology 1 and 2 cover the field of physiology in an elementary way, and are intended for students who are not prepared to pursue advanced courses in physiology, but desire some knowledge of the subject. Course 1 includes such topics as are most desirable for those who do not care to take more than one course in physiology. Students who are making the biological sciences their major study and are prepared in chemistry and physics are advised to select their work from courses 50, 51, 60, 61, and 70. Students who wish to make physiology their major study should have had physics, chemistry (including elementary organic chemistry), zoölogy, and either comparative anatomy or human anatomy. The required number of hours may be selected from courses 50, 51, 60, 61, 62, 63, and 70.

Fees will be charged in the various courses to cover the cost of materials used.

1.—ELEMENTARY PHYSIOLOGY. Five hours credit. Both semesters. Recitations, M. W. F., at 9, 10, or 1. Laboratory, Tu. Th., 8 to 10, 10 to 12, or 1 to 3. A course dealing especially with the nourishment of the body. It will include a study of the properties of living matter, the foods and their digestion and absorption, the functions of blood, the organs of circulation and their activities, breathing and respiration, metabolism and excretion. Biology, chemistry, and physics are highly desirable antecedents to the course. Stoland, Walling, Mills.

2.—ELEMENTARY PHYSIOLOGY. Five hours credit. Second semester. Recitations, M. W. F., at 10. Laboratory, Tu. Th., 10 to 12. A continuation of course 1. It includes a study of muscles, heat regulation, nerve, reflexes, brain, special senses, and the glands of internal secretion. Walling, Mills.

10.—HYGIENE AND SANITATION. Three hours credit. Both semesters. M. two hours; W. F. 1 hour, at 2. Lectures, demonstrations, laboratory work, and recitations. A general survey of ventilation, heating, water supply, garbage and sewage, food and dieting, personal, industrial, school and military hygiene, habitations, vital causes of disease, disinfection and quarantine. Hyde.

50.—ADVANCED PHYSIOLOGY I. Five hours credit. Both semesters. Recitations, M. W. F., at 1. Laboratory by appointment. Lectures, recitations, conferences, journal club, and laboratory experimental work, pertaining to the functions of the human body. Designed for those who wish to teach and to specialize in the subject. Prerequisites, chemistry, physics, biology; recommended, physiology 1 or 2 or equivalents. Hyde.

51.—ADVANCED PHYSIOLOGY II. Five hours credit. Both semesters. Recitation, at 11. Laboratory by appointment. A continuation of, but not necessarily preceded by course 50. Prerequisites, same as for 50. Hyde.

60.—NUTRITIONAL PHYSIOLOGY. Five hours credit. Second semester. Lectures, demonstrations, and recitations, M. W. F., at 8. Laboratory, 8 to 10, Tu. Th. A study of the functions of the body that have to do

especially with the nourishment of the organism. Prerequisites, physics, biology, and chemistry. A course in organic chemistry is recommended as an antecedent. Stoland.

61.—EXPERIMENTAL PHYSIOLOGY. Three hours credit. Both semesters. Two laboratory periods and one hour conference per week, by appointment. A course intended to familiarize the students of physiology with the laboratory experiments on mammals and other animals. Prerequisite, any previous course in physiology. Stoland, Mills.

62.—PHYSIOLOGY OF THE ORGANS OF INTERNAL SECRETION. Second semester. Three to five hours credit. Hours by appointment. A course which includes a study of the organs of internal secretion and their relations to the body activities. Lectures, demonstrations, and laboratory work. Prerequisites, courses 1 and 2, or any advanced course in Physiology. Stoland.

63.—SPECIAL PROBLEMS IN PHYSIOLOGY. Two to seven hours credit. Both semesters. Hours by appointment. A course intended for students who wish to pursue special laboratory work or investigation, either independently or in conjunction with members of the staff.

70.—MEDICAL PHYSIOLOGY. Ten hours credit. First semester. Lectures and recitations daily, at 8. Laboratory, M. Tu. W. Th., 9 to 12. A course intended primarily for medical students, but open to college students who have the proper preparation. Stoland, Mills.

ROMANCE LANGUAGES AND LITERATURES.

Professor: GALLOO (Head of Department).

Associate Professors: NEUEN SCHWANDER., OWEN.

Assistant Professors: STANTON, GARDNER, GAGE, DERRY.

Instructors: DA CRUZ, MOLINA, TAILLIART, OSMA,
CRAM, BOURDON, BEAUPARLANT.

EQUIPMENT. The department of Romance languages and literatures possesses a collection of illustrative material consisting of several hundred photographs, stereopticon slides, maps, plans, plaster casts, etc., illustrating the history, architecture, life, and general culture of the Romance nations.

The Romance library of the University contains 5,304 volumes, which cover in a representative way the literary development of France, Spain, and Italy, from the earliest times to the present day, and the greater monuments of Portuguese literature. Thirty-four periodicals are received, which include all the important literary and philological journals devoted to the Romance languages.

ADVICE AS TO CHOICE OF COURSES. A major in Romance languages with emphasis on French includes, as prescribed courses, French 3, 4, 6, 10, two courses in French literature, one of which must be 54, and Spanish 71; as suggested courses within the department, Spanish 72, Italian, or French courses in language or literature, according to the purpose of the student.

A major in Romance languages with emphasis on Spanish includes, as prescribed courses, Spanish 23, 24, 25, 74, 75, and French 51 and 52; as suggested courses within the department, further courses in Spanish, French or Italian.

All students whose major is in Romance languages are advised to elect courses in mediæval and modern European history, and in the history of English literature.

Those who intend to take up the study of historical development of any of the Romance languages must be well grounded in Latin and have a reading knowledge of German, and if they purpose to teach, should take, in addition to the required work in education, the course in oral composition in the language in which they are specializing.

Graduate work in this department presupposes acquaintance with elementary Spanish and Italian.

FRENCH.

1.—ELEMENTARY FRENCH. Five hours credit. First semester, at 8, 9, 10, 11, and 1; second semester, at 8, 9, 11, and 2. Grammar (Fraser and Squair) and easy reading. Drill in pronunciation, accidence and elementary syntax. Prerequisite, three years of foreign language. Students who have had less than three years of foreign language form a section reciting at 8.

Neuen Schwander, Derry, Cram, Bourdon, Tailliant, Beauparlant.

2.—FRENCH READING AND GRAMMAR. Five hours credit. Second semester, at 8, 9, 10, 11, and 1; first semester, at 8, 10, and 2. Reading of simple prose texts, with exercises in dictation and elementary composition. Prerequisite, course 1.

Neuen Schwander, Stanton, Gage, Derry, Cram, Bourdon, Tailliant.

3.—MODERN FRENCH WRITERS. Three hours credit. Both semesters, at 9 and 1. Translation and reading of works of Mérimée, George Sand, Victor Hugo, Anatole France, and René Bazin. Prerequisite, course 2.

Neuen Schwander, Stanton, Gage, Derry.

4.—FRENCH COMPOSITION. Two hours credit. Both semesters, at 9 and 1. Written exercises for grammatical review; free composition; oral exercises; dictation. Must be preceded or accompanied by course 3.

Stanton, Cram, Bourdon.

5.—SCIENTIFIC FRENCH. Three hours credit. First semester, by appointment. Open to students who are specializing in the sciences and who need an accurate and ready understanding of scientific French. Prerequisites, courses 1 and 2.

Gage.

6.—FRENCH PROSE AND POETRY. Three hours credit. Both semesters, at 10. Reading of representative works of the seventeenth, eighteenth and nineteenth centuries. Prerequisites, courses 3 and 4; may be taken in the same semester as course 4.

Neuen Schwander, Stanton.

7.—FRENCH COMPOSITION. Two hours credit. Both semesters, by appointment. A continuation of course 4, intended to provide additional practice in writing and speaking French.

Stanton, Cram.

8.—CORNEILLE AND RACINE. Two hours credit. Both semesters, by appointment. Reading of three or four of the greatest tragedies of each poet. Must be preceded by 3 and 4, and should be by 6.

Galloo, Stanton.

9.—ORAL FRENCH COMPOSITION. Three hours credit. Daily, second semester. This course is conducted entirely in French, and the idiomatic use of the spoken tongue is emphasized. Regular attendance at the meetings of the Cercle Français is expected of the students who elect this course. Must be preceded by 3 and 4, and preceded or accompanied by either 6 or 8, or their equivalents. By appointment. Derry, Bourdon.

10.—MOLIERE. Three hours credit. First semester, at 11:30. Careful study of the more important plays, rapid reading of the others; reports in French by members of the class. Should be preceded by 6 or its equivalent.

Galloo.

11.—FRENCH COMPOSITION, WRITTEN AND ORAL. Two hours credit. First semester, by appointment. Practice in writing and speaking French.

Stanton, Tailliant.

12.—ADVANCED FRENCH COMPOSITION. Two hours credit. Second semester, by appointment. Translation, original composition, and practice in speaking French. Prerequisite, course 7 or 11.

Galloo.

50.—THE FRENCH ELEMENT IN ENGLISH. Three hours credit. Second semester, by appointment. A study of the influence of French upon the vocabulary and syntax of the English language, with especial reference to Norman and post-Norman periods. The course will be conducted in English.

Neuen Schwander.

51.—FRENCH I. Five hours credit. First semester, at 10. For Juniors and Seniors who are beginning French. The aim of this course is to give some insight into the fundamental principles of language, together with a more comprehensive acquaintance with French and wider reading than in the usual elementary courses for Freshmen and Sophomores. Galloo.

52.—FRENCH READING AND GRAMMAR. Five hours credit. Second semester, at 10. A continuation of course 51. Galloo.

53.—HISTORY OF EARLY FRENCH LITERATURE. Three hours credit. First semester, by appointment. From the earliest times to the classic period. Lectures, recitations, and private readings. Galloo.

54.—HISTORY OF MODERN FRENCH LITERATURE. Three hours credit. Second semester, by appointment. From the beginning of the classic period to the present day. Lectures, recitations, and private readings. Stanton.

55.—FRENCH LITERATURE OF THE SEVENTEENTH CENTURY. Two hours credit. First semester, by appointment. A study of the development of French literature from Malherbe to the end of the reign of Louis XIV. Galloo, Stanton.

56.—FRENCH LITERATURE OF THE EIGHTEENTH CENTURY. Two hours credit. Second semester, by appointment. Special attention is paid to the life and works of Voltaire; study of Montesquieu, Rousseau and the encyclopedists; the dramatists. Neuen Schwander.

57.—THE ROMANTIC SCHOOL I. Three hours credit. First semester, by appointment. A study of the rise of romanticism in France and of its characteristic products in poetry, the novel, and the drama. Lamartine, A. de Vigny, and A. de Musset. Galloo.

58.—THE ROMANTIC SCHOOL II. Two hours credit. Second semester, by appointment. A continuation of course 57, devoted chiefly to Victor Hugo's works. Galloo.

59.—THE LITERARY MOVEMENT IN THE SECOND HALF OF THE NINETEENTH CENTURY. Three hours credit. First semester, by appointment. The reaction against romanticism, the Parnassiens, realism and naturalism. The reaction against the scientific spirit, idealism and symbolism. The rise and growth of the new literary criticism. Galloo.

60.—DEVELOPMENT OF THE FRENCH NOVEL I. Two hours credit. First semester, by appointment. A survey of the novel in the seventeenth and eighteenth centuries. Galloo.

61.—DEVELOPMENT OF THE FRENCH NOVEL II. Three hours credit. Second semester, by appointment. The novel in the nineteenth century, with special reference to the origin and growth of realism and naturalism. Galloo.

62.—THE FRENCH DRAMA. Three hours credit. Second semester, by appointment. A study of the development of the drama in France from its origin to the close of the nineteenth century. Lectures, recitations, and written reports. Galloo.

63.—OLD FRENCH. Two hours credit. First semester, by appointment. An introduction to French philology. Reading of the *Extraits de la Chanson de Roland* (Gaston Paris), with special attention to the phonetic changes and the inflections. Galloo.

64.—OLD FRENCH. Two hours credit. Second semester, by appointment. A continuation of course 63. *Chrestomathie de l'ancien français* (Constans). Galloo.

SPANISH.

21.—ELEMENTARY SPANISH. Five hours credit. First semester, at 8, 9, 10, 11, 1; second semester at 8, 9, 11, and 1. An outline of grammar (Fuentes & François). Reading of short stories. Elementary com-

position. Prerequisite, three years of foreign language. Students who have had less than three years of foreign language form a section reciting at 1. Stanton, Gardner, Gage, da Cruz, Molina, Osma.

22.—SPANISH READING AND GRAMMAR. Five hours credit. Second semester, at 8, 9, 11, 2; first semester, at 8, 10, and 2. Grammar and composition. Reading of easy modern prose: Carrión-Aza, Pérez Galdós, Caballero, Martínez de la Rosa, etc. Prerequisite, course 21.

Gardner, da Cruz, Molina, Osma.

23.—MODERN SPANISH WRITERS. Three hours credit. Both semesters, at 8 and 10. Translation and reading of representative works of Alarcón, Becquer, Pereda, Valera, Palacio Valdés. Prerequisite, course 22.

Gardner, da Cruz, Molina.

24.—SPANISH COMPOSITION. Two hours credit. Both semesters, at 8 and 10. Systematic training in writing and speaking Spanish. Must be preceded or accompanied by course 23. Owen, Gardner, da Cruz.

25.—SPANISH PROSE AND POETRY. Three hours credit. Both semesters, at 2. Specimens of the work of the poets and prose writers of the eighteenth and nineteenth centuries. Must be preceded or accompanied by course 24. Owen.

26.—ADVANCED SPANISH COMPOSITION. Two hours credit. Second semester, at 2. Translation into Spanish of English prose; original composition, and practice in speaking Spanish. Must be preceded or accompanied by course 25. Owen, Molina.

27.—ORAL SPANISH COMPOSITION. Three hours credit. Daily, first semester, by appointment. This course is conducted wholly in Spanish, and the idiomatic use of the spoken tongue is emphasized. Must be preceded or accompanied by course 25. Molina, Osma.

71.—SPANISH I. Five hours credit. First semester, at 1. For Juniors and Seniors who are beginning Spanish. The aim of this course is to give some insight into the fundamental principles of language, together with a more comprehensive acquaintance with Spanish and wider reading than in the usual elementary courses for Freshmen and Sophomores. Owen.

72.—SPANISH READING AND GRAMMAR. Five hours credit. Second semester, at 1. A continuation of course 71. Owen.

73.—DON QUIJOTE. Three hours credit. Second semester, by appointment. A careful reading of the first part, together with outside reading and reports covering the more famous chapters of the second part. Molina.

74.—HISTORY OF EARLY SPANISH LITERATURE. Three hours credit. First semester, at 3. From the earliest times, through the classic period. Lectures, recitations, and private readings. Owen.

75.—HISTORY OF MODERN SPANISH LITERATURE. Three hours credit. Second semester, at 3. From the classic period to the present day. Lectures, recitations, and private readings. Owen.

76.—CONTEMPORARY SPANISH LITERATURE. Three hours credit. First semester, by appointment. A study of the literary renaissance in Spain since the Spanish-American war. The "Generation of 1898"; novel drama and criticism. A brief glance at Spanish-American literature of the present. Prerequisite, Spanish 25.

77.—THE SPANISH NOVEL OF THE SIXTEENTH AND SEVENTEENTH CENTURIES. Two hours credit. First semester, by appointment. The *Novelas ejemplares* of Cervantes, *Lazarillo de Tormes*, and other picaresque novels. The Spain of the period. Lectures, collateral reading, and reports. Molina.

78.—THE CLASSIC SPANISH DRAMA. Two hours credit. Second semester, by appointment. Tirso de Molina, Lope de Vega, Calderón, and

Ruiz de Alarcón. Careful study of selected plays from each dramatist; more rapid reading of others. Schack's Spanish Dramatic Literature. Owen.

ITALIAN.

Students are advised to take, as preparation, courses 1 and 2 or 51 and 52 in French.

31.—ELEMENTARY ITALIAN I. Three hours credit. First semester, by appointment. Grammar. Reading, Marinoni's Reader. Cram.

32.—ELEMENTARY ITALIAN II. Continuation of Course 31. Three hours credit. Second semester, by appointment. Grammar, composition, and reading of works of Manzoni, Edmondo de Amicis and other modern writers. Cram.

33.—ITALIAN GRAMMAR AND READING. Two hours credit. First semester, at 1. Grammatical exercises accompanying the reading and translating of works of Goldoni, Fogazzaro, Carducci, Pascoli. Prerequisite course 32. Cram.

34.—WRITERS OF CINQUECENTO. Two hours credit. Second semester, at 1. Reading of selections from Machiavelli, Cellini, Ariosto, Tasso, etc. D'Ancona and Bacci's Manuale della letteratura italiana, vols. I, II and III. Prerequisite, course 33. Cram.

80.—DANTE. Three hours credit. First semester, by appointment. The Divina Commedia; its relation to the age, and its importance in the history of the Italian language and literature. Prerequisite, course 33. Cram.

PORTUGUESE.

90.—ELEMENTARY PORTUGUESE. Three hours credit. First semester, by appointment. Branner's Grammar and easy reading. Open to students who have had at least ten hours of French or Spanish. da Cruz.

91.—PORTUGUESE READING, SPEAKING AND WRITING. Three hours credit. Second semester, by appointment. A continuation of course 90. da Cruz.

RUSSIAN.

95.—RUSSIAN LANGUAGE I. Three hours credit. First semester.

96.—RUSSIAN LANGUAGE II. Three hours credit. Second semester.

SOCIOLOGY.

Professor: BLACKMAR (Head of Department).

Associate Professor: HELLEBERG.

Assistant Professor: ELMER.

Instructor: BODENHAFFER.

Lecturers: DEACON, SIPPY.

EQUIPMENT. Instruction in the department of sociology is conducted chiefly by lectures, reading, recitation, and investigation, aided in the elementary courses by textbooks. The University library is well equipped for the study of sociology. All of the principal magazines treating of the work of this department are on file in the reading room for the use of the students. In addition there are charts, maps, and outlines. In the natural history museum is a valuable collection of specimens for the study of anthropology and ethnology. A limited amount of investigation of social and racial conditions is being carried on.

ADVICE AS TO COURSES. Elements of sociology as found in course 1 or 50 or their equivalent is a prerequisite to further work in the department. At the beginning of the Junior year students desiring to major in sociology should consult with an instructor in the department in regard to choice of courses for the required major work.

The development of professional social work in this country opens up an attractive field for university men and women. The courses offered by this department are, therefore, of definite interest to those preparing to become workers in social settlements, secretaries of private charities, welfare secretaries in industries, staff sociologists in our state charitable and penal institutions, city superintendents of public welfare, recreation directors, and playground and social center workers. Experience has demonstrated that the study of sociology is a valuable preparation for teaching.

Suggested courses for training for social service (elements of sociology a prerequisite):

I. *Training for social service in urban communities.* 59, Ethnology; 61, Contemporary Society; 51, Applied Sociology; 52, Social Pathology; 53, Remedial and Corrective Agencies; 64, Municipal Sociology; 55 Psychological Sociology; Social Surveys; 107, Criminology (graduate); Immigration and Race Problems. Students should elect additional courses in economics and political science.

II. *Training for social service in rural communities.* 60, Rural Sociology; 51, Applied Sociology; 56, The Family; 55, Psychological Sociology. Students should elect certain courses in economics and physical education.

III. *Training for social service in institutions.* 58, Anthropology; 52, Social Pathology; 53, Remedial and Corrective Agencies; 51, Applied Sociology; Vital Statistics; 107, Criminology (graduate); 103, Institutional and social service.

IV. *Training in preparation for the ministry, law, and medicine.* 58, Anthropology; 59, Ethnology; 56, The Family; 61, Contemporary Society; 54, Public Opinion; 55, Psychological Sociology; 57, Socialism; Vital Statistics.

V. *Training in preparation for teachers.* 61, Contemporary Society; 56, The Family; 52, Social Pathology; 53, Remedial and Corrective Agencies; 51, Applied Sociology; 55, Psychological Sociology; 54, Public Opinion.

1.—ELEMENTS OF SOCIOLOGY.* Three hours credit. Both semesters, at 8 and 1. A general course in the foundations and principles of sociology, including a study of the origin, evolution, structure, organization and activities of society. The course is especially arranged for those who have not previously studied sociology. Prerequisite to all courses except 50. Elmer, Bodenhafer.

50.—ELEMENTS OF SOCIOLOGY. Two hours credit. Both semesters, at 10. The same as course 1, except more difficult and greater emphasis on pure sociology and social theory. Either 50 or 1 prerequisite to other courses. Blackmar.

51.—PRINCIPLES OF APPLIED SOCIOLOGY. Three hours credit. Second semester, at 8. An application of the theories and principles studied in courses 1 and 50 to social activities. A special study of social energy and social waste, with methods of conservation of social energy and elimination of social waste. Elmer.

52.—SOCIAL PATHOLOGY. Two hours credit. First semester, at 11. A general study of poverty, pauperism, unemployment, epilepsy, insanity, degeneracy, etc., and their causes, prevention, and cure. Conditions of the slums and rural population, housing of the poor, social maladjustment, occupational diseases, etc. Bodenhafer.

53.—REMEDIAL AND CORRECTIVE AGENCIES. Two hours credit. Second semester, at 11. Administration of charitable and correctional affairs; management of jails, reformatories, penitentiaries, and institutions for defectives and dependents; housing of the poor. Each student is required to visit at least two social institutions and report on same. Bodenhafer.

54.—PUBLIC OPINION. Three hours credit. Second semester, at 2. A study of the origin and development of social control; public opinion and democracy; leadership and authority; phenomena of the public or ethnic mind; the relations of the individual and the group. Helleberg.

55.—PSYCHOLOGICAL SOCIOLOGY. Five hours credit. First semester, at 1. A study of the social self and the process of its development, together with applications to a variety of social problems, in order to establish a viewpoint and method for sociology and all the social sciences. Helleberg.

56.—THE FAMILY. Two hours credit. Second semester, at 2. The origin and growth of the family. The true family a biological, psychological and moral unity. Psychology of family life. Helleberg.

57.—SOCIALISM. Two hours credit. First semester, at 2. The development of modern socialistic theories, including a study of French and German socialism. The development of the socialistic movement. Helleberg.

58.—GENERAL ANTHROPOLOGY. Two hours credit. First semester, at 8. The natural history of man. The probable origin and antiquity of man. Comparison with anthropoid apes. Man's physical, social, and mental characteristics. Evidences of Tertiary man. The beginnings of art and industry. The origin and development of languages. Blackmar.

59.—ETHNOLOGY. Two hours credit. Second semester, at 8. Origin of races and ethnic groups. Racial differentiation and development. Characteristics of ethnic society. The conflict and survival of races. Their geographical distribution. Influence of geographical and physical environment. Comparison of natural and civilized races. Blackmar.

60.—RURAL SOCIOLOGY. Two hours credit. Second semester, at 9. A study of social conditions in rural districts and small towns. The agencies for social and economic betterment. The church and the school-house as social centers. Political, social, and economic organizations. Elmer.

61.—CONTEMPORARY SOCIETY IN THE UNITED STATES. Three hours credit. First semester, at 2. A general survey of the natural environment, population and its distribution, industrial and social grouping, and is designed through the study of current concrete social problems as a means of correlating the various social sciences. Helleberg.

62.—DEVELOPMENT OF SOCIAL THEORY. Five hours credit. Second semester, at 1. A rapid historical survey of social philosophy from Plato to Comte, followed by a more detailed examination of current sociological theories. Primarily a graduate course, but open to Seniors by permission of the instructor. Helleberg.

63.—SOCIAL SURVEYS. Two hours credit. First semester, at 10. The history of the social survey. The social survey as a method of social investigation and of social statistics. This course is designed not only to present the literature of surveys, but to give the student the principles and practice of social surveys. Elmer.

64.—MUNICIPAL SOCIOLOGY. Two hours credit. First semester, at 9. A study of the population, conditions of life, and social problems in the modern city, with special reference to American municipalities. This course is a special study of city problems for students preparing for social work. Elmer.

65.—IMMIGRATION AND RACE PROBLEMS IN THE UNITED STATES. Three hours credit. First semester, at 9. The underlying social causes of population movement; social factors in the distribution of immigrant population; assimilation; social problems involved in the contact of races and peoples; effect upon social institutions; methods of readjustment and control. Elmer.

66.—VITAL STATISTICS. One hour credit. Second semester, Wednesday, at 10. Vital Statistics, social sanitation, movement of population in registration areas, mortality statistics, disease, etc. Deacon.

67.—EUGENICS. Three hours credit. Second semester, at 8. A study of the agencies under social control that may improve or impair racial qualities, whether mentally, morally, or physically. Preparation in organic evolution, genetics, or heredity, including the Mendelian law, is an essential prerequisite for the successful pursuit of this study. Minimum requirement, three hours of biological science, preferably zoölogy 1, 4, 55, 64, or 72. Blackmar.

68.—WAR RELIEF AND HOME SERVICE. Two hours credit. Tu. Th., at 11. This course is open to Juniors and Seniors who wish to prepare for Red Cross social service. It is especially devoted to the training for home service in the civilian relief division. Blackmar.

ZOOLOGY.

Professor: ALLEN (Head of Department).

Associate Professor: BAUMGARTNER.

Assistant Professors: ROBERTSON, NOWLIN.

Instructor: SWINGLE.

Preparator and Demonstrator: BROWN.

Assistant Instructor: DOUTHITT.

The department is in possession of ample facilities in the way of apparatus and laboratory material. There are representative types of marine animals from the Pacific and the Atlantic coasts, as well as from Bermuda and Jamaica. Historical, cytological and embryological material of great variety has been provided. Microscopes, microtomes, and other apparatus for even the most advanced work are at hand.

ADVICE CONCERNING CHOICE OF COURSES. Course 1 is designed as an introduction to the subject, and, so far as possible, gives a general survey of the animal kingdom. The character of the work is such as to lay particular stress upon training in the independent observation and correlation of facts. It is, therefore, a course which may be taken by those who wish merely to gain a general idea of zoölogy and also by those who wish to become acquainted with the methods of scientific work. As an elementary course it forms a basis for any advanced work, and is required for entrance into the other courses.

MAJOR REQUIREMENTS. In the work counting toward a major students must complete ten hours chosen from among the following courses: 53, 54, 55, 56, and 71.

1.—ELEMENTARY ZOÖLOGY. Five hours credit. First semester, laboratory, M. W. F., 8 to 10, 10 to 12, or 1 to 3; recitations and lectures, Tu. Th., 11 or 2. Second semester, laboratory, 8 to 10, or 10 to 12; recitations and lectures, 9 or 11. A study of biological principles as illustrated in the animal kingdom as a whole. The laboratory work is designed to give training in methods of scientific observation and interpretation. Fee, \$2.50.

Allen, Robertson, Nowlin, Swingle, Brown, Douthitt.

2A.—SYSTEMATIC ZOÖLOGY OF INVERTEBRATES. Three hours credit. First semester, M. W., laboratory, 10 to 12. F., lecture, 10 to 11. A course on classification and structure of the main invertebrate groups. Designed to meet the needs of those intending to teach zoölogy, or those wanting a broad survey of the animal kingdom. Some time will be spent on field study of local fauna. Prerequisite, zoölogy 1 or equivalent. Fee, \$2. Nowlin.

2B.—AQUATIC ZOÖLOGY. Two hours credit. Second semester, Tu, Th. 10 to 12. A field and laboratory course dealing with the physiology, responses, and life cycles of the fresh-water protozoa, worms, and crusta-

cea. Attention will be given their relation to water supply, sewage disposal, and other problems of sanitation. Prerequisite, zoölogy 1 or equivalent. Fee, \$1.50. Nowlin.

3.—COMPARATIVE ANATOMY. Five hours credit. First semester, by appointment. Second semester, lectures, Tu. Th. at 3; laboratory, M. W. 1 to 4 or 1 to 3, Tu. Th. F. A course dealing with the structure and relations of the vertebrates. It consists of a laboratory study of types, lectures, and assigned readings. This course is designed for premedical students, those intending to teach, and those desiring a general cultural course. Prerequisite, course 1 or its equivalent. Fee, \$3.50.

Baumgartner, Swingle, Douthitt.

4.—ORNITHOLOGY. Three hours credit. Second semester, Tu. Th., at 8, and by appointment. Field trips by appointment. A study of the birds of this vicinity. A list of the different species will be made by the students, and special attention will be given to living birds, notes being taken as to date of appearance, nesting habits, song, etc. The collections in the museum will be used. Fee, \$1.50. Allen.

5.—PRINCIPLES OF HEREDITY.* Two hours credit. Second semester, at 8. An introduction to the laws of heredity and variation in animals and man. The cellular basis; Mendel's Law; the origin of new races; the influence of heredity and environment. Lectures, recitations, laboratory work consisting of problems relating to variation, heredity, etc.; assigned readings and conferences. Each student must trace the inheritance of a series of family traits. Prerequisite, course 1 or equivalent. Fee, \$1. Robertson.

50.—ELEMENTARY ZOÖLOGY. Five hours credit. First semester, 8 to 10. A study of biological principles as illustrated in the animal kingdom as a whole. The laboratory work is designed to give training in methods of scientific observation and interpretation. This course is a duplication of course 1, and is not open to those who have taken the latter. Fee, \$2.50. Swingle.

52.—MAMMALS. Two hours credit. Second semester, M. W., 8 to 10. This course will be a study of local fauna together with the preparations in the Museum. Fee, \$1.50.

53.—ANIMAL HISTOLOGY. Five hours credit. First semester, 1 to 3. The methods of preparation and a careful study of normal tissues constitute this course. Lectures, assigned readings, and laboratory work. Prerequisites, courses 1 and 3, or equivalents. Fee, \$3.50.

Baumgartner.

54.—CYTOLOGY. Five hours credit. First semester, 8 to 10. General structure and functions of the cell in development and inheritance. Cell division; cell differentiation; formation of germ cells; sex determination; fertilization; parthenogenesis, etc., with emphasis on chromosomes and other elements concerned in heredity. Training in tissue culture methods and cytological technique. Prerequisite, ten hours of zoölogy or equivalent. Fee, \$3.50. Robertson.

55.—EMBRYOLOGY — DESCRIPTIVE AND EXPERIMENTAL. Five hours credit. Second semester, 10 to 12. The first three-fifths of the semester will be devoted to a study of the development of the chick and pig. The remaining two-fifths to original work along lines of experimental embryology, largely upon the factors that govern or modify development. Prerequisite, 10 hours of zoölogy or equivalent. Fee, \$3.50. Allen.

56.—VERTEBRATE PALEONTOLOGY. Five hours credit. Second semester, 10 to 12. A course dealing with the anatomical characters which have marked the evolutionary stages in the geological history of vertebrates. Lectures, recitations, assigned readings, and laboratory work. Abundant material is at hand for the illustration of the course. Prerequisite, 10 hours of zoölogy. Geology 1 is recommended as further preparatory work. Fee, \$3.50.

57.—PARASITOLOGY. Three hours credit. First semester; lectures, M. W., at 1; laboratory, F., 1 to 3. Designed to meet the needs of those who study medicine or public-health problems, and those interested in agriculture. The class will be divided upon this basis into two sections for the consideration of the more specialized phases of the work. Prerequisite, course 1 or its equivalent. Fee, \$1.50. Allen, Nowlin.

60.—ANIMAL BIOLOGY. Three hours credit. First semester, at 9. This course is designed for those students who wish to study the general theories of animal biology beyond the point reached in the elementary course. Lectures, recitations, discussions, and assigned readings. Prerequisite, zoölogy 1 or equivalent in other biological sciences. Allen.

61.—VERTEBRATES OF THE PAST. Two hours credit. First semester, at 8. A consideration of the various types of extinct animals, with a discussion of the general processes of evolution through which the present forms of animal life have passed. This will be illustrated by the collections in the museum. Prerequisite, zoölogy 1 or equivalent. Allen.

64.—HEREDITY IN RELATION TO EUGENICS. Three hours. First semester, at 10. Lectures, assigned readings, and conferences. An exposition of the biological laws underlying eugenics. The latter half of the term is spent in a study of the human traits and their inheritance through family pedigrees. For students of sociology, medicine, education, etc. Not open to those who have taken course 5. Prerequisite, five hours of biological science. Fee, \$1. Robertson.

71.—PROTOZOÖLOGY. Three hours credit. Second semester, M. W. F., 8 to 10. Laboratory and lecture course with instructions in methods of technique and the parasitic protozoa. Special emphasis is placed upon those forms producing human diseases. Prerequisite, ten hours of zoölogy or equivalent. Fee, \$2.50. Nowlin.

72.—GENETICS. Five hours credit. Second semester, at 1. Laboratory, by appointment. Lectures, readings, and laboratory. A careful study of variation, inheritance of acquired characters, mutation, Mendelism, sex-linked inheritance and the inheritance of secondary sexual characters, problems of evolution in the light of experimental breeding. Attention is given to the varieties of domesticated animals. Prerequisite, 10 hours of zoölogy, including zoölogy 1 and 5 or 64, or their equivalents. Fee, \$3.50. Robertson.

73.—ZOÖLOGICAL PROBLEMS. Three or five hours credit. Both semesters, by appointment. This course is designed to provide for the continuation of work of an essentially original character begun in some preceding course. It is to be taken under the direction of the teacher under whom the work was begun. Fee, \$2.50 or \$3.50. The staff.

SECTION IV.

School of Engineering,

Including Mining and Metallurgy.

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FACULTY.

FRANK STRONG, Ph. D., Chancellor of the University, and President of the Faculties.

PERLEY F. WALKER,¹ M. M. E., Dean of the School of Engineering, and Professor of Industrial Engineering.

GEORGE C. SHAAD, E. E., Acting Dean of the School of Engineering and Professor of Electrical Engineering.

ERASMUS HAWORTH, Ph. D., Professor of Geology and Mineralogy.

WILLIAM A. GRIFFITH, Professor of Drawing and Painting.

JAMES NAISMITH,³ M. D., Professor of Physical Education.

FREDERICK E. KESTER, Ph. D., Professor of Physics.

HAMILTON P. CADY, Ph. D., Professor of Chemistry.

HENRY W. HUMBLE, A. M., Professor of Law.

HERBERT A. RICE, C. E., Professor of Mechanics and Structural Engineering.

GOLDWIN GOLDSMITH, Ph. B., Professor of Architecture.

FRANK B. DAINS, Ph. D., Professor of Chemistry.

CLEMENT C. WILLIAMS, C. E., Professor of Railway Engineering.

JOHN N. VAN DER VRIES,⁴ Ph. D., Professor of Mathematics.

CHARLES H. ASHTON, Ph. D., Professor of Mathematics.

ARTHUR C. TERRILL, E. M., Professor of Mining and Ore Dressing.

WILLIAM A. WHITAKER,² A. M., Associate Professor of Metallurgy.

FREDERICK H. SIBLEY, M. E., Professor of Mechanical Engineering.

GEORGE J. HOOD, B. S., Associate Professor of Mechanical Drawing.

MARTIN E. RICE, M. S., Associate Professor of Physics.

CHARLES A. HASKINS, B. S.,¹ Associate Professor of Sanitary Engineering.

FREDERICK N. RAYMOND, A. M., Associate Professor of Rhetoric.

HERMAN C. ALLEN, Ph. D., Associate Professor of Chemistry.

WILLIAM C. MCNOWN, B. S., Associate Professor of Civil Engineering.

ALFRED H. SLUSS, B. S. in M. E., Associate Professor of Mechanical Engineering.

B. L. WOLFE, Associate Professor of Mining.

EDWIN F. STIMPSON, B. S., Assistant Professor of Physics.

CHARLES COCHRAN,⁵ B. S., in M. E., Assistant Professor of Mechanical Drawing.

FRANK E. JONES,¹ Assistant Professor of Pattern Making and Founding.

CLIFFORD C. YOUNG, M. S., Assistant Professor of Chemistry.

HERBERT E. JORDAN, Ph. D., Assistant Professor of Mathematics.

THEODORE T. SMITH,⁴ A. M., Assistant Professor of Physics.

PAUL V. FARAGHER, Ph. D., Assistant Professor of Chemistry.

1. On leave for military service.

2. Absent on leave, second semester.

3. On leave for war work.

4. On leave for war work, second semester.

5. Absent on leave.

JOHN D. GARVER, B. S., Assistant Professor of Mechanical Engineering.
 FRANK L. BROWN, B. S., Assistant Professor of Mechanics.
 WALTER S. LONG, A. M., Assistant Professor of Chemistry.
 EDWARD M. BRIGGS, A. M., Assistant Professor of German.
 HARRY A. ROBERTS,¹ B. S., Assistant Professor of Civil Engineering.
 JOSEPH E. WELKER, M. of C. E., Assistant Professor of Sanitary Engineering.
 JACOB O. JONES, M. S., Assistant Professor of Hydraulics.
 FREDERICK W. BRUCKMILLER, A. B., Assistant Professor of Chemistry.
 JOHN J. WHEELER, A. B., Assistant Professor of Mathematics.
 SOLOMON LEFSCHETZ, Ph. D., Assistant Professor of Mathematics.
 F. ELLIS JOHNSON, E. E., Assistant Professor of Electrical Engineering.
 RICHARD L. GRIDER, E. M., Assistant Professor of Mining Engineering.
 WINTHROP P. HAYNES, Ph. D., Assistant Professor of Geology, Mineralogy, and Petrology.
 LAWRENCE A. HARTLEY, Superintendent of Fowler Shops and Instructor in Machine Shop Practice.
 MAY GARDNER, A. B., Assistant Professor of Romance Languages.
 H. A. FORNEY, Instructor in Forging.
 WILLARD AUSTIN WATTLES, A. M., Instructor in Rhetoric.
 OSCAR ROCKLUND, Instructor in Foundry.
 CHARLES W. WHITE, Instructor in Machine Shop.
 CLARENCE ESTES, B. S., in Chem. Eng., Assistant Professor in Chemistry.
 ARTHUR W. LARSEN, A. M., Instructor in Mathematics.
 LAURENS E. WHITEMORE,⁶ A. M., Instructor in Physics.
 CLIFFORD W. SEIBEL, B. S., Instructor in Chemistry.
 LA FORCE BAILEY, A. M., Instructor in Architectural Engineering.
 SYLVESTER SPARKS SCHOOLEY, B. S., Instructor in Electrical Engineering.
 J. J. JAKOWSKY, Assistant Instructor in Engineering Drawing.

LECTURERS.

J. A. L. WADDELL, D. Sc., L. L. D., Consulting Engineer, Kansas City, Mo., Lecturer on Economics of Engineering.
 JOHN S. WORLEY, B. S., M. S., member of Valuation Committee, Interstate Commerce Commission. Lecturer on Transportation.

ADMINISTRATIVE COMMITTEE.

P. F. WALKER, ⁷	G. GOLDSMITH.
C. H. ASHTON, <i>Secretary</i> .	A. C. TERRILL.
G. C. SHAAD, <i>Chairman</i> .	M. E. RICE.
H. A. RICE.	W. A. WHITAKER.
G. J. HOOD, <i>Chief Adviser of Freshmen</i> .	

1. On leave for military service.

6. Absent for war work.

7. Absent on military service, 1917-18.

SCHOOL OF ENGINEERING.

DEPARTMENTS.

CIVIL ENGINEERING.

ELECTRICAL ENGINEERING.

MECHANICAL ENGINEERING.

MINING ENGINEERING, SCHOOL OF MINES.

CHEMICAL AND METALLURGICAL ENGINEERING.

ARCHITECTURAL ENGINEERING.

ENGINEERING AND ADMINISTRATIVE SCIENCE.

ORGANIZATION AND PURPOSE.

The School of Engineering was organized as a distinct school of the University in 1891. Prior to that time, for eighteen years, courses in engineering had been given under the collegiate department, mainly in the civil and electrical branches.

Technical work is given in eight departments, entirely within the control of the School. Departments of the College of Liberal Arts give courses in science, mathematics, languages, and economics for engineering students. The curriculum includes definitely scheduled work leading to degrees in the main branches of engineering—civil, electrical, mechanical, mining, chemical and metallurgical, and architectural—with options under the civil in railway, structural, and sanitary engineering, and under mining in coal mining, ore dressing, and geology. Provision is made also for those who desire a training for business and administrative work based upon engineering.

The requirements for graduation emphasize the fact that a thorough grounding in the fundamental sciences, mathematics, and language is essential to successful engineering practice. This idea is then extended by introducing a moderate amount of specialized work in the Junior and Senior years, but the aim throughout is to develop the principles underlying technical engineering work rather than to make direct applications. It will be observed, moreover, that the requirements for graduation call for about twenty credit hours more than are required for a degree in pure science or arts, and this excess is in the nature of practice work in shop, field, and drawing room. By these three methods the purpose of the School is shown, namely, to give the basis of a liberal education while providing for training in specialized professions, and to give sufficient practice work and familiarity with operating methods to enable the graduate to make himself useful to employers while he is gaining the broader experience necessary to a successful engineering career.

FIVE-YEAR COURSES.

In order to give greater emphasis to the value of general educational training for engineers, provision has been made for students so desiring to spend one year in the College of Arts and Sciences, and then to enter the School of Engineering for four years of study, making up a total of five years in the University. The conditions under which this may be done, and statements as to the degree conferred on completion of the work, are given in the following pages. The amount of technical work required is practically the same as in the regular four-year courses, but

opportunities are offered for selecting a wider range of studies, and so providing for a broader education. Young men just graduating from high school are strongly urged to adopt this plan of procedure.

The leading characteristics of the several branches are noted in the following outlines:

Civil Engineering.

In the professional work emphasis is laid on surveying and field methods; on mechanics and the application to the designing of steel and concrete structures; on railway location and construction; on hydraulics, and the application to irrigation, canal, and power work; and on water supply and other municipal problems, including pavement and highway construction. Particular emphasis is given to the training of men for the three important branches: namely, railway, structural, and sanitary engineering. For each of these a special schedule for the work of the Senior year will be found in the following pages.

Electrical Engineering.

The specialized studies under this heading follow the fundamental work in physics and machine elements. They give emphasis to the methods of design, construction, and operation of electrical equipment of all kinds as employed for the production, distribution, and application of electrical energy, and in telephone service. Much emphasis is laid on the fundamental principles of mechanics and electricity, and on laboratory practice in handling standard apparatus. Original investigation is encouraged in every way possible.

Mechanical Engineering.

In the professional work especial emphasis is placed on machine construction and design, the properties of materials, power generation with heat engines, and general manufacturing methods. Options in the Senior year permit specialization to a limited degree, so that the student may give his attention to that line in which he develops the greatest interest. The aim is to give the training which will permit the graduate to perform successfully the work required of the technical designer and administrator in manufacturing industries.

Mining Engineering—School of Mines.

The mining department, in conjunction with the associated departments of chemistry, including metallurgy and geology, with the general work of the Engineering School as a whole, performs all the functions of a School of Mines.

The courses include work in many of the departments of the University. Emphasis is laid on chemistry, geology, mineralogy, metallurgy, physics, mechanics, ore dressing, surveying, design, mining operation, and management. Under the heading, "Curriculum," options for the five important branches of the mining industry: namely, mining geology, metal mining, coal mining, ore dressing, and metallurgy, given under chemical engineering, are arranged to permit the student to specialize in the work for which he has a preference and for which he is best fitted. The aim is to encourage original investigation, to prepare men to undertake the development of mineral properties, to design and construct mine plants and ore-dressing mills and works, to evaluate mining property, to properly report propositions submitted for investment, to supervise mining operations, and to make rapid profitable advancement in the professional work required by the large mining corporations.

Chemical and Metallurgical Engineering.

In this branch opportunity is given for specialization in technical chemistry, with the aim to combine the ability to perform chemical work with training in the fundamentals of engineering. It is expected that students are fitting themselves for positions as chemists and superintendents of manufacturing plants where the work is based on chemical science. These include many industries, such as those involving iron and steel, smelting, refining, bleaching and dyeing processes, and the manufacture of many specialized products.

Architectural Engineering.

Much is included in this branch which involves the artistic as well as the utilitarian in building design and construction. It is recognized that architecture is essentially a fine art, but that this should be combined with the scientific and technical training which will enable the graduate to deal with the engineering side of construction work. The professional work given includes thorough instruction in the history and theory of architecture and in the principles of design. It is the aim to give such training as will enable the graduate to render efficient service while he is supplementing his school training by experience gained in office practice.

Engineering and Administrative Science.

Arrangements have been perfected whereby the College departments of economics, history, and sociology coöperate with the School of Engineering in offering work to fit men for positions in the administrative offices of manufacturing companies and in the transportation departments of railroads. Both the College student and the engineering student may profit by the plan.

The student who has started in engineering may begin to vary the regular schedule of studies during his second year, and may, under the advice of a committee of the Faculty, arrange to substitute from twenty to twenty-five hours of courses in the College departments indicated in place of the more highly specialized engineering work. The student is trained, therefore, in all the fundamentals of engineering, and should be well fitted to take positions in offices where the work depends largely upon technical phases of the industry in question. A more detailed statement of the work will be found in the following pages under the heading "Curriculum."

DEGREES GRANTED.

All graduates of the School of Engineering are admitted to the degree of bachelor of science in engineering or bachelor of science. The first is given to those who have completed the work laid out on the regular four-year plan, based on entrance from the accredited high schools. The second is given to those who enter the School of Engineering after having completed thirty hours of work in the College of Arts and Sciences, and to those who complete the work offered in engineering and administrative science.

All graduates of the School of Engineering may enter the Graduate School of the University and become candidates for the degree of Master of Science under the regulations there in force.

Graduates in engineering from this school, and those who have received the master's degree for advanced study in engineering under the Graduate School, are eligible to the professional degrees of Civil Engineer, Electrical Engineer, Mechanical Engineer, Engineer of Mines, Chemical Engineer, and Architectural Engineer, whichever is appropriate to the undergraduate work taken. Candidates for these degrees must

have spent at least three years of actual time in professional practice in positions of responsibility, in the design, construction, or operation of professional works, and must furnish detailed and satisfactory evidence as to the nature and extent of this practice.

The candidate must submit a thesis, accompanied by detailed explanations, drawings, specifications, estimates, etc., and embodying the results of his own work or observation. If approved, the thesis, with all accompanying materials, becomes the property of the University.

The thesis for any professional degree must be delivered to the Dean of the School of Engineering on or before May 15.

SCHOLARSHIP STANDING FOR GRADUATION.

In the General Information Section the system of grading is explained, there being four passing grades indicated by the letters A, B, C, and D. The last one, D, indicates a bare passing mark.

In the School of Engineering there is a regulation which limits the amount of barely passing grade work which will be accepted as credit toward a degree. Under this rule a student who has grade D in more than twenty-five percent of his total hours will not be recommended for graduation unless his case is given special consideration by the school faculty. Such special consideration may be given him only in case he has secured grades better than D in fifty percent of his hours of credit work in mathematics, physics, chemistry, geology, and all of the specialized engineering departments excepting shop work and drawing.

ADMISSION.

By act of the state legislature, all graduates of accredited high schools in Kansas are admitted to the Freshman class without examination.

Graduates of other preparatory schools will be admitted on such conditions as the Faculty may impose.

For the guidance of prospective students who desire to prepare themselves without graduating from accredited high schools an outline of preparatory studies which has been followed for many years is given below. A total of fifteen units must be offered for admission.

ENGLISH.—Rhetoric and English literature, 3 or 4 units. Three units required.

MATHEMATICS.—Elementary algebra, $1\frac{1}{2}$ units; plane geometry, 1 unit; solid geometry, $\frac{1}{2}$ unit; plane trigonometry, $\frac{1}{2}$ unit; advanced algebra, $\frac{1}{2}$ unit. Three units required to prepare for the regular engineering courses.

FOREIGN LANGUAGES.—Latin, 1, 2, 3, or 4 units; Greek, 1, 2, 3, or 4 units; German, 1, 2, 3, or 4 units; French, 1, 2, 3, or 4 units; Spanish, 1 or 2 units. Two units at entrance and ten hours of German, French, or Spanish in the University complete the requirements for graduation.

PHYSICAL SCIENCES.—Physical Geography, 1 or $\frac{1}{2}$ unit; physics, 1 unit; chemistry, 1 unit. One unit required.

BIOLOGICAL SCIENCES.—Botany, 1 unit; zoölogy, 1 unit; physiology, 1 or $\frac{1}{2}$ unit; biological science, 1 unit.

HISTORY AND SOCIAL SCIENCE.—Greek and Roman history, 1 unit; mediæval and modern history, 1 unit; English history, 1 unit; American history, 1 unit; economics, 1 or $\frac{1}{2}$ unit; civics, $\frac{1}{2}$ unit. Three units recommended.

MANUAL TRAINING.—Woodwork, forging, and machine tool work, 2 units; free-hand or mechanical drawing, 1 unit.

MISCELLANEOUS.—Stenography, $\frac{1}{2}$ unit; bookkeeping, $\frac{1}{2}$ unit; commercial law, $\frac{1}{2}$ unit; commercial geography, $\frac{1}{2}$ unit; agriculture, $\frac{1}{2}$ or 1 unit; psychology, $\frac{1}{2}$ unit; advanced arithmetic if taken after one year of algebra, $\frac{1}{2}$ unit. Not more than two units are allowed.

Entrance Examinations.

Candidates for admission who are not graduates of accredited Kansas high schools may offer themselves for examination in subjects usually embraced in the high-school curriculum. Whenever a candidate has thus secured credit for the equivalent of the work included in the curriculum

of the accredited high school he will be admitted to the Freshman class.

A schedule of these examinations will be found on page 50 of the General Information Section of the Catalog.

Inadequate Preparation.

When a student by his current work shows insufficient preparation for any course, he may be required to make good such deficiency in any manner prescribed by his instructor and approved by the Dean of the School.

Admission to Advanced Standing.

Credit for work of collegiate or professional standing is granted only on recommendation of the Advanced Standing Committee. For regulations governing the granting of such credit, see "Admission to Advanced Standing," Section I, page 49.

Foreign Language Required for Graduation.

The total amount of work in foreign language which is required for graduation, both high-school credits and courses taken after entering the University being considered together, must be equivalent to twenty hours in University courses, of which at least ten hours shall be in one modern foreign language, excepting that a student entering without any foreign language need take only fifteen hours in the University, provided the entire time is given to a single foreign language. Each unit of entrance credit counts as five hours.

The curriculum (see page 191) calls for ten hours of modern foreign language in the Freshman year. In any case where a student is able to satisfy the foreign language requirements by taking a lesser number of hours than ten, he may substitute other University work for the number of hours remaining.

Mathematics Required for Graduation.

The total amount of work in mathematics which is required for graduation, both high-school credits and courses taken after entering being considered together, must be equivalent to thirty-two hours in University courses for civil-, electrical-, mechanical-, and architectural-engineering students, and twenty-nine hours for mining-, and chemical-engineering students. Each unit of entrance credit counts as five hours. Students who present entrance credits amounting to more than fifteen hours, however, must complete the courses in calculus as prescribed in the curricula for the several branches.

Special Students.

Opportunity is given in the School of Engineering for the admission of persons of mature years who desire to pursue some special lines of work, without following any prescribed course of study or becoming candidates for a degree.

The admission of such special students is directly under the control of the Dean of the School of Engineering, whose certificate of acceptance must be presented to the Registrar before registration. Applicants for admission as special students must present satisfactory evidence of proper preparation for the courses desired, and must also meet other requirements as fixed by the Faculty.

Special students are subject to the same regulations as are regular students with regard to the quality of work performed and attendance at recitations and examinations, but not as to number of courses to be pursued.

If a special student later becomes a candidate for a degree, the credits he has received while enrolled as a special student will not be allowed

to count towards this degree, except by the approval of the Faculty. In no case may a student be granted a degree until he has been enrolled for one year as a regular student.

Any one regularly enrolled in another school of the University may be admitted as a special student to engineering classes, but all applications for such enrollment must be accompanied by the recommendation of the dean of the school concerned.

REGISTRATION.

All candidates for admission having certificates from accredited schools and all students of the University intending to pursue their studies during the ensuing year should present themselves for registration at the University on September 16, 17, or 18, 1918.

Registration at a later date will be permitted only on the payment of a fee of one dollar.

ENROLLMENT.

After registration has been completed with the Registrar and fees have been paid, students should apply to the Dean for enrollment in their classes. Enrollment the first semester occurs September 17 and 18, 1918, and on the first day of the second semester.

Enrollment at a later date will be permitted only on the payment of a fee of one dollar.

Enrollment Regulations.

The amount of work to be carried by students is expected to conform to the lists printed in the curriculum on the following pages. The number of hours there indicated may not be exceeded unless by express permission of the Dean. Students who have shown inability to carry the full schedule, or who plan to devote time to remunerative work outside of school, are frequently obliged to restrict the number of hours carried to fifteen or even less.

Students are assigned to groups, each group being in the charge of a member of the Faculty who acts as adviser at enrollment and during the year. Students above the Freshman class are assigned to groups according to departments in which they are specializing. Advisers are expected to retain oversight over their charges, and reports on the current work of students are made to them at monthly intervals.

FEES AND EXPENSES.

Matriculation fee, for residents of the state.....	\$5.00
for nonresidents.....	10.00
Incidental fee per school year, for residents of the state.....	10.00
for nonresidents.....	20.00
Diploma fee, at graduation.....	5.00

Cost of Materials.

In all laboratory and shop courses the student is charged for the materials and supplies he consumes in his work. These charges are payable in advance at the office of the University Registrar by the purchase of a book of coupons receivable for materials in any course, or by the payment of a fixed amount for a course in which the material cannot be issued to each student individually. A schedule of these fixed fees, varying from 50 cents to \$4, is posted in Marvin Hall and in the office of the University Registrar. In those courses where a large amount of

material is used by the student and paid for with coupons, the total cost for any one course may reach or occasionally exceed \$10.

Those students taking summer field work will be charged the actual cost of living and incidental expenses.

Cost of Drawing Instruments.

The ability to make standard office drawings in connection with the designing of machines and structures of all kinds is a necessary part of an engineer's attainments. The drawing practice begins in the Freshman year, and for all excepting chemical engineering students continues during the three years following. This fact makes necessary for each student the ownership of a set of drafting instruments of standard quality. In order to make this matter sure, and protect students from any who might wish to sell inferior grades, the School prescribes the kinds which may be used. Because of increases in price, students entering the Engineering School should plan to expend from \$22 to \$25 for the regulation sets, together with other necessary equipment for the drawing classes.

Expense for Inspection Trips.

Students should make provision for expenses of about \$40 in the Junior or Senior year, or both, for inspection trips to engineering works. Local trips will, in most cases, take the place of an extended trip for the duration of the war. (See "Inspection Trips" at the end of "Description of Courses.")

ENGINEERING EXTENSION WORK.

CORRESPONDENCE COURSES.

Through the University Extension Division the School of Engineering offers work by correspondence. By this method it is possible for a student to secure instruction in many of the general courses required for the degree in engineering and in a few of the technical courses.

In cases where a group of six or more persons may be formed, arrangements have been made whereby the Extension Division will send an instructor at stated intervals to meet the class. By this means many of the technical courses are being offered which are not offered directly through correspondence. An additional fee is required for work thus given. In this manner it is possible for young men to do a large portion of the work required for a degree, but the School of Engineering requires that at least one year of work shall be done in residence.

Work is being offered also of a grade below that required for regular credit, in what are termed Vocational Courses. By means of these courses effort is made to extend the facilities of the University to a large group of young men who have not had time or opportunity to fit themselves for regular engineering work. When possible the work is carried on in coöperation with the school authorities of cities and towns and with industrial organizations which employ boys in considerable numbers.

For further details, see "University Extension Division."

TECHNICAL SOCIETIES.

TAU BETA PI. Kansas Alpha Chapter of the honorary engineering society of Tau Beta Pi was installed in December, 1914. Members are from the Senior and Junior classes, chosen under regulations which require that all who are elected shall have standing in the upper fourth of their class. It is governed entirely by undergraduates.

Departmental Student Societies.

In each of the six departments in which a complete course of study leading to graduation is scheduled there is a well-organized society holding regular meetings at weekly or biweekly intervals. At these meetings technical addresses are given or topics from the current press discussed. The architectural, chemical, and civil engineering societies are local in their character. The electrical, mechanical, and mining organizations are connected with the respective national engineering societies. More detailed information is given in the General Information Section of the Catalog.

CURRICULUM.

Leading to the Degree of Bachelor of Science in Engineering.

The work required for the degree of bachelor of science in the School of Engineering is in large measure prescribed. The following schedules show the variations among the several branches. Students are required to enroll for the work in the order given, excepting a few of the specialized courses in the Junior and Senior years, which do not depend directly on preceding courses.

The work of the Freshman year is very nearly the same for all students, so that a choice among the several branches need not be made at the start, except in the case of architectural engineering. A slight modification of the shop courses in machine construction makes it desirable for those planning to take civil and mining engineering to make definite decision at the end of the first semester.

COURSES COMMON TO ALL LINES.†

FRESHMAN YEAR.

FIRST SEMESTER, 17 hours credit.*

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit</i>
Mathematics 2.....	College Algebra.....	3
Mathematics 3.....	Plane Trigonometry.....	2
German, French, or Spanish†.....	(Course as approved).....	5
English 1 E.....	Rhetoric I.....	3
Engineering Drawing 1.....	Free-hand and Mechanical Drawing.....	2
Engineering Drawing 2, or	{ Machine Drawing, or	{
Machine Construction 1 and 2.....		
Engineering 1.....	Foundry Practice and Pattern Making.....	2
	Engineering Lectures.....	

SECOND SEMESTER, 17 hours credit.

Mathematics 4 E.....	Analytic Geometry.....	5
German, French, or Spanish†.....	(Course as approved).....	5
English 2 E.....	Rhetoric II.....	2
Engineering Drawing 3.....	Descriptive Geometry.....	3
Engineering Drawing 2, or	{ Machine Drawing, or	{
Machine Construction 1 and 2, or		
Machine Construction 3 and 5.....	Foundry, Forge and Machine Shop Prac- tice as assigned.....	2

CIVIL ENGINEERING.

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ hours credit.

Civil Engineering 1.....	Elementary Surveying.....	3
Civil Engineering 5.....	Roads and Pavements.....	2
Mathematics 5 E.....	Calculus I.....	5
Physics 1 E.....	General Physics.....	5
Geology 2a (or 2).....	Elementary Geology.....	3
	Technical Report I.....	½

*THE HOUR OF CREDIT.—The amount of work required to complete a course is measured in "hours." One hour in the School of Engineering represents an amount of work which is estimated to require three hours per week, throughout a semester, of the time of a student of average ability. These three hours may be divided in any ratio between class attendance and outside work, most courses being in the ratio of one hour in class to two hours of outside preparation; or two hours in class to one hour of outside preparation or report writing; or all three required in class with no outside preparation. In the descriptions of courses the number of hours credit for each is stated.

†The foreign language chosen is carried regularly throughout the year, five hours each semester. The selection of the language courses will depend on the amount and kind of language offered at entrance. Students offering more than two units at entrance may be allowed to substitute other nontechnical courses for the foreign language, provided they complete ten hours in one modern language.

‡Excepting Architectural Engineering. For that see page 200.

SECOND SEMESTER, 16½ hours credit.

Course number.	Subject.	Hours credit.
Civil Engineering 4.....	Railway Surveying.....	2
Civil Engineering 2.....	Higher Surveying.....	3
Mathematics 6 E.....	Calculus II.....	3
Physics 2 E.....	General Physics.....	5
Mechanical Engineering 5.....	Engines and Boilers.....	3
	Technical Report II.....	½

SUMMER WORK.

Civil Engineering 3.....	Field Work, 4 weeks.
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JUNIOR YEAR.

FIRST SEMESTER, 18 hours credit.

Civil Engineering 55.....	Railway Surveying.....	4
Civil Engineering 51.....	Cartography.....	2
Mechanics 50.....	Mechanics.....	5
Chemistry 2.....	Advanced Inorganic Chemistry.....	4
English 59.....	Advanced Composition.....	3

SECOND SEMESTER, 17½ hours credit.

Civil Engineering 57.....	Railway Location.....	3
Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing Laboratory.....	1
Mechanics 53.....	Graphic Statics.....	2
Mechanics 55.....	Hydraulics.....	3
Mechanics 56.....	Hydraulic Laboratory.....	1
Chemistry 5 E.....	Engineering Chemistry.....	3
	Technical Report III.....	½

SENIOR YEAR.

FIRST SEMESTER, 18 hours credit.

Civil Engineering 61.....	Stresses in Framed Structures.....	5
Civil Engineering 64.....	Masonry.....	2
Civil Engineering 65.....	Reinforced Concrete.....	3
Civil Engineering 70.....	Sanitary Engineering I.....	3
Civil Engineering 76.....	Seminar.....	½
	Optional.....	3
	Thesis.....	1
	Technical Report IV.....	½

SECOND SEMESTER, 17 hours credit.

Civil Engineering 62.....	Bridge Design.....	4
Civil Engineering 70.....	Sanitary Engineering I.....	2
Engineering 52.....	Industrial Administration.....	3
Mechanics 57.....	Cement Laboratory.....	1
Civil Engineering 66.....	Reinforced Concrete Design.....	1
	Optional.....	4
	Thesis.....	2

One extended inspection trip is required during the Junior or the Senior year.

Railway Engineering Option.

SENIOR YEAR.

FIRST SEMESTER, 19 hours credit.

Civil Engineering 61.....	Stresses in Framed Structures.....	5
Civil Engineering 64.....	Masonry.....	2
Civil Engineering 65.....	Reinforced Concrete.....	3
Civil Engineering 70.....	Sanitary Engineering I.....	3
Civil Engineering 58.....	Railway Terminals and Signaling.....	2
Electrical Engineering 60.....	Elements of Electrical Engineering.....	3
Civil Engineering 76.....	Seminar.....	½
	Technical Report IV.....	½

SECOND SEMESTER, 17 hours credit.

Civil Engineering 62.....	Bridge Design.....	4
Civil Engineering 75.....	Sanitary Engineering I.....	2
Mechanics 57.....	Cement Laboratory.....	1
Civil Engineering 59.....	Railway Construction and Maintenance.....	3
Engineering 52.....	Industrial Administration.....	3
Civil Engineering 66.....	Reinforced Concrete Design.....	1
	Thesis.....	3

Structural Engineering Option.**{ SENIOR YEAR.****FIRST SEMESTER, 18½ hours credit.**

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Civil Engineering 61.....	Stresses in Framed Structures.....	5
Civil Engineering 64.....	Masonry.....	2
Civil Engineering 65.....	Reinforced Concrete.....	3
Civil Engineering 70.....	Sanitary Engineering I.....	3
Mechanics 54.....	Engineering Materials.....	2
Electrical Engineering 60.....	Elements of Electrical Engineering.....	3
	Technical Report IV.....	½

SECOND SEMESTER, 17 hours credit.

Civil Engineering 62.....	Bridge Design.....	4
Civil Engineering 75.....	Roads and Pavements.....	2
Mechanics 57.....	Cement Laboratory.....	1
Civil Engineering 67.....	Higher Structures.....	3
Engineering 67.....	Industrial Administration.....	3
Civil Engineering 66.....	Reinforced Concrete Design.....	1
	Thesis.....	3

Municipal and Sanitary Option.**JUNIOR YEAR.****FIRST SEMESTER, 17 hours credit.**

Civil Engineering 73.....	Sanitary Science.....	2
Mechanics 50.....	Mechanics.....	5
Chemistry 2.....	Advanced Inorganic Chemistry.....	4
English 59.....	Advanced Composition.....	3
Electrical Engineering 60.....	Electrical Engineering.....	3

SECOND SEMESTER, 18½ hours credit.

Civil Engineering 74.....	Waste and Garbage Disposal.....	1
Civil Engineering 75.....	Roads and Pavements.....	2
Civil Engineering 52.....	City Planning.....	2
Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing Laboratory.....	1
Chemistry 3.....	Qualitative Analysis.....	4
Mechanics 55.....	Hydraulics.....	3
Mechanics 56.....	Hydraulic Laboratory.....	1
	Technical Report III.....	½

SENIOR YEAR.**FIRST SEMESTER, 17½ hours credit.**

Civil Engineering 61.....	Stresses in Framed Structures.....	4
Civil Engineering 64.....	Masonry.....	2
Civil Engineering 70.....	Sanitary Engineering I.....	3
Civil Engineering 65.....	Reinforced Concrete.....	3
Chemistry 54.....	Water Analysis.....	5
	Technical Report IV.....	½

SECOND SEMESTER, 17 hours credit.

Engineering 52.....	Industrial Administration.....	3
Civil Engineering 72.....	Sanitary Design.....	5
Civil Engineering 71.....	Sanitary Engineering II.....	4
Mechanics 57.....	Cement Laboratory.....	1
Civil Engineering 66.....	Reinforced Concrete Design.....	1
	Thesis.....	3

One extended inspection trip is required during the Junior or the Senior year.

ELECTRICAL ENGINEERING.**SOPHOMORE YEAR.****FIRST SEMESTER, 17½ hours credit.**

Mathematics 5 E.....	Calculus I.....	5
Physics 1 E.....	General Physics.....	5
Chemistry 2.....	Advanced Inorganic Chemistry.....	4
Mechanical Engineering 1.....	Machine Design I.....	1
Machine Construction 3.....	Forging.....	1
Machine Construction 5.....	Bench Work.....	1
	Technical Report I.....	½

SECOND SEMESTER, 18½ hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Mechanical Engineering 3.....	Elementary Machine Design.....	3
Mechanical Engineering 4.....	Steam Machinery.....	2
Mathematics 6 E.....	Calculus II.....	3
Physics 2 E.....	General Physics.....	5
Chemistry 3.....	Qualitative Analysis.....	4
Machine Construction 6.....	Machine Tool Work I.....	1
	Technical Report II.....	½

JUNIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

Electrical Engineering 50.....	Dynamo Machinery.....	3
Electrical Engineering 54.....	Electrical Laboratory.....	1½
Mechanics 50.....	Mechanics.....	5
Physics 52.....	Theory of Electricity.....	3
Physics 56 E-I.....	Electrical Measurements I.....	1½
Mechanical Engineering 52.....	Heat Engine Theory.....	3
	Technical Report III.....	½

SECOND SEMESTER, 18 hours credit.

Electrical Engineering 51.....	Theory of Alternating Currents.....	5
Electrical Engineering 55.....	Electrical Laboratory.....	1½
Mechanical Engineering 53.....	Mechanics of Heat Engines.....	2
Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing Laboratory.....	1
English 59.....	Advanced Composition.....	3
Physics 56 E-II.....	Electrical Measurements II.....	1½

SENIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

Electrical Engineering 52.....	Advanced Dynamo Machinery.....	5
Electrical Engineering 56.....	Advanced Electrical Laboratory.....	1½
Civil Engineering 50.....	Surveying.....	3
Mechanical Engineering 65.....	Power Laboratory.....	1½
Chemistry 70.....	Physical Chemistry I.....	5
	Thesis.....	1
	Technical Report IV.....	½

SECOND SEMESTER, 16½ hours credit.

Electrical Engineering 58.....	Electric Power Transmission.....	5
Electrical Engineering 57.....	Illuminating Engineering.....	2½
Engineering 52.....	Industrial Administration.....	3
Electrical Engineering 61.....	Thesis.....	3
	Optional.....	3

One extended inspection trip is required during the Junior or the Senior year.

MECHANICAL ENGINEERING.

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ hours credit.

Mechanical Engineering 1.....	Machine Design I.....	3
Mechanical Engineering 6.....	Steam Engineering.....	4
Mathematics 5 E.....	Calculus I.....	5
Chemistry 2.....	Advanced Inorganic Chemistry.....	4
Machine Construction 3.....	Forging.....	1
Machine Construction 5.....	Bench Work.....	1
	Technical Report I.....	½

SECOND SEMESTER, 18½ hours credit.

Mathematics 6 E.....	Calculus II.....	3
Physics 1 E.....	General Physics.....	5
Chemistry 5 E.....	Engineering Chemistry.....	3
Civil Engineering 50.....	Surveying.....	3
Machine Construction 6.....	Machine Tool Work I.....	1
Economics 1 E.....	Elementary Economics.....	3
	Technical Report II.....	½

JUNIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Mechanical Engineering 51.....	Thermodynamics.....	3
Mechanical Engineering 2.....	Mechanism.....	3
Physics 2 E.....	General Physics.....	5
Mechanics 50.....	Mechanics.....	5
Machine Construction 7.....	Machine Tool Work II.....	1
	Technical Report.....	½

SECOND SEMESTER, 16 hours credit.

Mechanical Engineering 50.....	Machine Design II.....	4
Mechanical Engineering 60.....	Shop Methods.....	1½
Mechanical Engineering 64.....	Mechanical Engineering Laboratory.....	1
Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing Laboratory.....	1
English 59.....	Advanced Composition.....	3
Machine Construction 8.....	Advanced Machine Shop Practice.....	1
Mechanical Engineering 68.....	Summer Vacation Work.....	
	Technical Report.....	½

SENIOR YEAR.

FIRST SEMESTER, 18½ hours credit.

Mechanical Engineering 56.....	Heat Engine Design.....	4
Mechanical Engineering 67.....	Thesis.....	1
Mechanics 55.....	Hydraulics.....	3
Mechanics 56.....	Hydraulic Laboratory.....	1
Engineering 51.....	Manufacturing.....	2
Electrical Engineering 50.....	Dynamo Machinery.....	3
Electrical Engineering 54.....	Electrical Laboratory.....	1½
Mechanical Engineering.....	Option (see below).....	3

SECOND SEMESTER, 16 hours credit.

Mechanical Engineering 66.....	Heat Engine Laboratory.....	1½
Mechanical Engineering 67.....	Thesis (continued).....	2
Mechanical Engineering 54.....	Heating, Ventilating, and Refrigerating... ..	2
Engineering 52.....	Industrial Administration.....	3
Electrical Engineering 53.....	Alternating Currents.....	3
Electrical Engineering 55.....	Electrical Laboratory.....	1½
Mechanical Engineering.....	Option (see below).....	3

Power Option.

FIRST SEMESTER.

Mechanical Engineering 58.....	Gas Engine and Compressor Design, or	} 3
Mechanics 58.....	Hydraulic Power.....	

SECOND SEMESTER.

Mechanical Engineering 57.....	Steam Engine and Turbine Design, or	} 3
Electrical Engineering 62.....	Central Stations.....	

Manufacturers Option.

FIRST SEMESTER.

Mechanical Engineering 58.....	Gas Engine and Compressor Design, or	} 3
Mechanical Engineering 61.....	Structural Design.....	

SECOND SEMESTER.

Mechanical Engineering 57.....	Steam Engine and Turbine Design, or	} 3
Mechanical Engineering 62.....	Industrial Plant Design.....	

One extended inspection trip required during the Senior or Junior year.

MINING ENGINEERING.

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ or 19½ hours credit.

Mathematics 5 E.....	Calculus I.....	5
Geology 2a or 2.....	Elementary Geology.....	3
Geology 2b.....	Historical Geology I.....	2
Chemistry 2.....	Advanced Inorganic Chemistry.....	3
	Chemistry 2.....	2
Civil Engineering 1.....	Elementary Surveying.....	1
	Field Surveying.....	2
	Technical Report I.....	½
Optional: Mechanical Engineering I.....	Machine Design.....	1

SECOND SEMESTER, 17½ hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Mining Engineering 50.....	Mine Surveying.....	1
Mining Engineering 1 or 68.....	Elements of Mining.....	3
Geology 31.....	Mineralogy I.....	5
Chemistry 3.....	Qualitative Analysis.....	2
	Qualitative Laboratory.....	3
Civil Engineering 2.....	Higher Surveying.....	1
	Field Surveying.....	2
	Technical Report II.....	½

SUMMER WORK.

Civil Engineering 3.....	Field Work, 2 weeks.
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JUNIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

Mining Engineering 54.....	Metal Mining.....	2
Geology 71.....	Economic Geology I.....	5
Physics 1 E.....	General Physics.....	5
Chemistry 51.....	Quantitative Analysis.....	5
	Technical Report III.....	½

SECOND SEMESTER, 18 or 19 hours credit.

Mining Engineering 52.....	Mining Law.....	1
English 59.....	Advanced Composition.....	3
Mechanics 50.....	Mechanics.....	5
Physics 2 E.....	Physics.....	4
	Physics Laboratory.....	1
Metallurgy 53.....	Assaying.....	5

Metal Mining Option.

SENIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

Mining Engineering 53.....	Ore Dressing I.....	1
Mining Engineering 56.....	Ore Dressing Laboratory.....	1
	Mine, Mill and Plant Design.....	1
	Design Drafting.....	1
Mining Engineering 64.....	Mining Engineering.....	3
Mechanics 51.....	Strength of Materials.....	4
	Testing Laboratory.....	1
Metallurgy 93 or.....	{ General Metallurgy, or Mining Geology.....	2
Mining Engineering 69.....		
Economics 1 E.....	Elements of Economics.....	3
	Technical Report IV.....	½

SECOND SEMESTER, 18 hours credit.

Mining Engineering 55.....	Mine Hydraulics.....	2
Mining Engineering 57.....	Mine Administration.....	1
Mining Engineering 58.....	Ore Dressing II.....	2
	Ore Dressing Laboratory.....	2
Mining Engineering 59.....	Mine Examinations and Reports.....	2
Mining Engineering 60.....	Thesis.....	2
Mechanical Engineering 4.....	Steam Engineering.....	2
Metallurgy 91.....	Metallurgy II.....	3
Engineering 52.....	Industrial Administration.....	2

One inspection trip is required during the Sophomore or Junior year, and another in the Senior year.

NOTE.—In the Freshman year, mining engineers should take, during the first semester: Engineering Drawing 1 and 2, and during the second semester: Mach. C 3 and 5.

Total hours credit, 142 or 143.

Coal Mining Option.

SENIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

Mining Engineering 53.....	Ore Dressing.....	2
Mining Engineering 55.....	Mining Hydraulics.....	2
Mining Engineering 56.....	Mine Plant and Mill Design I.....	2
Mining Engineering 61.....	Coal Mining I.....	2
Geology 71.....	Economic Geology I.....	5
Mining Engineering 64.....	Mining Engineering.....	3
Option.....	Technical Report IV.....	½
	Mining Journal.....	

SECOND SEMESTER, 17 hours credit.

Course number.	Subject.	Hours credit.
Mining Engineering 57.....	Mine Administration.....	1
Mining Engineering 59.....	Mine Examinations and Reports.....	2
Mining Engineering 60.....	Thesis.....	2
Mining Engineering 62.....	Coal Mining II.....	3
Geology 72.....	Economic Geology IIa and IIb.....	5
Engineering 52.....	Industrial Administration.....	2
	Optional.....	3
	Mining Journal.....	

Ore Dressing Engineering Option.

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ hours credit.

Mathematics 5 E.....	Calculus I.....	5
Geology 2a (or 2).....	Elementary Geology.....	3
Geology 2b.....	Historical Geology I.....	2
Chemistry 2.....	Advanced Inorganic Chemistry.....	5
	Laboratory.....	
Mechanical Engineering 1.....	Machine Drafting.....	1
Machine Construction 5.....	Bench Work.....	1
Machine Construction 6.....	Machine Tool Work.....	1
	Technical Report I.....	½

SECOND SEMESTER, 18½ hours credit.

Geology 4.....	Field Geology I.....	2
Physics 1 E.....	General Physics.....	5
Chemistry 3.....	Qualitative Analysis.....	5
	Laboratory.....	
Geology 31.....	Mineralogy I.....	5
Machine Construction 3.....	Forging.....	1
	Technical Report II.....	½

JUNIOR YEAR.

FIRST SEMESTER, 19½ hours credit.

Mining Engineering 53.....	Ore Dressing I.....	2
Chemistry 51.....	Quantitative Analysis.....	5
Mechanics 50.....	Mechanics.....	5
Physics 2 E.....	Physics.....	5
Mining Geology 69.....	Mining Geology.....	2
	Technical Report III.....	½

SECOND SEMESTER, 17½ hours credit.

Mining Engineering 58.....	Ore Dressing II.....	4
Metallurgy 53.....	Assaying.....	5
Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing of Materials.....	1
Civil Engineering 50.....	Elementary Surveying.....	3
	Field.....	
	Technical Report IV.....	½

SENIOR YEAR.

FIRST SEMESTER, 17 hours credit.

Mining Engineering 58.....	Ore Dressing III.....	4
Mining Engineering 56.....	Mine Plant and Mill Design I.....	2
Mining Engineering 54.....	Metal Mining.....	2
Electrical Engineering 60, or.....	Elements of Electrical Engineering, or.....	3
Mining Engineering 64.....	Mining Engineering.....	
Economics 1 E.....	Elements of Economics.....	3
English 59.....	Advanced Composition.....	3

SECOND SEMESTER, 18 hours credit.

Mining Engineering 63.....	Mine Plant and Mill Design II.....	3
Mining Engineering 55.....	Mining Hydraulics.....	2
Mining Engineering 59.....	Mining Examinations and Reports.....	2
Metallurgy 91.....	Metallurgy II.....	3
Mechanical Engineering 4.....	Steam Machinery.....	2
Engineering 52.....	Industrial Administration.....	3
Mining Engineering 57.....	Mine Administration.....	
	Thesis.....	3

One inspection trip is required during the Sophomore or Junior year, and another in the Senior year.

Total hours credit, 137.

NOTE.—In the Freshman year students should take in—

(a) *First Semester:*

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Engineering Drawing 1.....	Free-hand and Mechanical Drawing.....	2
Machine Construction 1.....	Foundry Practice.....	1
Machine Construction 2.....	Pattern Making.....	1

(b) *Second Semester:*

Engineering Drawing 2.....	Machine Drawing.....	2
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Geological Engineering Option.

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ hours credit.

Geology 2a (or 2).....	Elementary Geology.....	3
Geology 2b.....	Historical Geology I.....	2
Mathematics 5 E.....	Calculus I.....	5
Chemistry 2.....	Advanced Inorganic Chemistry.....	3
	Laboratory.....	2
Civil Engineering 1.....	Elementary Surveying.....	1
	Field Surveying.....	2
	Technical Report I.....	½

SECOND SEMESTER, 18½ hours credit.

Geology 4.....	Field Geology I.....	2
Geology 31.....	Mineralogy I.....	5
Chemistry 3.....	Qualitative Analysis.....	2
	Laboratory.....	3
Mining Engineering 68 or 1.....	Principles of Mining.....	3
Civil Engineering 2.....	Higher Surveying.....	1
	Field Surveying.....	2
	Technical Report II.....	½
Civil Engineering 3.....	Summer Field Work, 2 weeks.....	

JUNIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

Geology 51.....	Geologic and Topographic Maps.....	2
Geology 50.....	Geologic Processes.....	3
Geology 62.....	Invertebrate Paleontology I.....	5
Geology 81 or.....	Petrology I.....	2
Mining Engineering 69.....	Mining Geology.....	2
Geology 82.....	Petrography.....	3
Mining Engineering 53.....	Ore Dressing I.....	1
	Ore Dressing Laboratory.....	1
	Technical Report III.....	½

SECOND SEMESTER, 17 or 18 hours credit.

Geology 61.....	Historical Geology II.....	5
Physics 1 E.....	General Physics.....	4
	Physics Laboratory.....	1
Mining Engineering 52.....	Mining Law.....	1
Mining Engineering 58.....	Ore Dressing II.....	2
	Ore Dressing Laboratory.....	2
English 59.....	Advanced Composition.....	3

SENIOR YEAR.

FIRST SEMESTER, 15½ hours credit.

Geology 71.....	Economic Geology I.....	5
Mechanics 50.....	Mechanics.....	5
Optional:		
a. Chemistry 51.....	Quantitative Analysis.....	5
b. Economics 1 E.....	Elements of Economics.....	3
Mining Engineering 54.....	Metal Mining.....	2
c. Economics 1 E.....	Elements of Economics.....	3
Mining Engineering 69.....	Mining Geology.....	2
d. Economics 1 E.....	Elements of Economics.....	3
e. Options.....	(Courses as approved).....	5
	Technical Report IV.....	½

SECOND SEMESTER, 19 hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Geology 72.....	Economic Geology II.....	5
Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing of Materials.....	1
Mining Engineering 59.....	Mine Examinations and Reports.....	2
Mining Engineering 60.....	Thesis.....	2
Optional:		
a. Metallurgy 53.....	Assaying.....	5
b. Metallurgy 91.....	Metallurgy II.....	3
Option.....	.....	2
c. Geology 63, 80 or 83.....	(Courses as approved).....	5
d. Options.....	(Courses as approved).....	5

One extended inspection trip is required during the Junior or Senior year.

Options.

List from which to select optional courses in the department of geology, subject to approval. (For description of Courses see College and Graduate School):

Geology 52.....	Field Geology II (Summer Session).....	6
Geology 53.....	Field Geology Reports.....	3
Geology 59.....	Geography and Geology of Kansas.....	2
Geology 63.....	Invertebrate Paleontology II.....	5
Geology 73.....	Structural and Dynamic Geology.....	5
Geology 74.....	Fuel Technology.....	2
Geology 80.....	Mineralogy II.....	5
Geology 83.....	Petrology II.....	5

NOTE:—In the Freshman Year students should take—

a. In the First Semester:

Engineering Drawing 1 and 2.....	Machine Drawing.....	4
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b. In the Second Semester:

Machine Construction 3.....	Forging.....	1
Machine Construction 5.....	Bench Work.....	1

CHEMICAL AND METALLURGICAL ENGINEERING.

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ hours credit.

Chemistry 2.....	Advanced Inorganic Chemistry.....	5
Mathematics 5 E.....	Calculus I.....	5
Physics 1 E.....	General Physics.....	5
Mechanical Engineering I.....	Machine Design I.....	1
Machine Construction 5.....	Bench Work.....	1
Machine Construction 6.....	Machine Tool Work.....	1
	Technical Report 1.....	½

SECOND SEMESTER, 16½ hours credit.

Chemistry 3.....	Qualitative Analysis.....	5
Physics 2 E.....	General Physics.....	5
Geology 31.....	Mineralogy I.....	5
Machine Construction 3.....	Forging.....	1
	Technical Report II.....	½

Chemical Engineering Option.

JUNIOR YEAR.

FIRST SEMESTER, 18½ hours credit.

Chemistry 62.....	Organic Chemistry I.....	5
Chemistry 51.....	Quantitative Analysis I.....	5
Mechanics 50.....	General Mechanics.....	5
English 59.....	Advanced Composition.....	3
	Technical Report III.....	½

SECOND SEMESTER, 18 hours credit.

Chemistry 80.....	Industrial Chemistry; Inorganic.....	3
Chemistry 52.....	Quantitative Analysis II.....	5
Chemistry 63.....	Organic Chemistry II.....	5
Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing Laboratory.....	1

SENIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

Course number.	Subject.	Hours credit.
Chemistry 81.....	Industrial Chemistry; Organic.....	3
Chemistry 70.....	Physical Chemistry I.....	5
Metallurgy 90.....	Metallurgy I.....	3
Metallurgy 93.....	General Metallurgy.....	2
	{ Optional from Chemistry Department, 4 hours or	4
	{ Optional 2 hours and Thesis 2 hours.....	
	Technical Report IV.....	½

SECOND SEMESTER, 17 hours credit.

Chemistry 71.....	Physical Chemistry II.....	5
Metallurgy 53.....	Assaying.....	3
Metallurgy 91.....	Metallurgy II.....	3
Engineering 52.....	Industrial Administration.....	3
	Thesis.....	3

One extended inspection trip is required during the Senior year.

Metallurgical Engineering Option.

JUNIOR YEAR.

FIRST SEMESTER, 18 hours credit.

Metallurgy 90.....	Metallurgy I.....	3
Metallurgy 93.....	General Metallurgy.....	2
English 59.....	Advanced Composition I.....	3
Chemistry 51.....	Quantitative Analysis I.....	5
Mechanics 50.....	Mechanics.....	5

SECOND SEMESTER, 17½ hours credit.

Metallurgy 91.....	Metallurgy II.....	3
Metallurgy 92.....	Metallurgy Laboratory.....	2
Chemistry 52.....	Quantitative Analysis II.....	5
Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing Laboratory.....	1
Mechanical Engineering 4.....	Steam Machinery.....	2
	Technical Report III.....	½

SENIOR YEAR.

FIRST SEMESTER, 18½ hours credit.

Chemistry 70.....	Physical Chemistry I.....	5
Geology 2a (or 2).....	Elementary Geology.....	3
Electrical Engineering 60.....	Elements of Electrical Engineering.....	3
Mining Engineering 53.....	Ore Dressing I.....	2
Mining Engineering 56.....	Mine Plant and Mill Design I.....	2
Economics 1 E.....	Elements of Economics.....	3
	Technical Report IV.....	½

SECOND SEMESTER, 19 hours credit.

Metallurgy 53.....	Assaying.....	5
Metallurgy 95.....	Metallography.....	2
Mining Engineering 58.....	Ore Dressing II.....	4
Mining Engineering 55.....	Mining Hydraulics.....	2
Engineering 52.....	Industrial Administration.....	3
Thesis.....	As approved by adviser.....	5

ARCHITECTURAL ENGINEERING.

FRESHMAN YEAR.

FIRST SEMESTER, 17 hours credit.

Architectural Engineering 1.....	Free-hand Drawing I.....	2
Mathematics 2.....	College Algebra.....	3
Mathematics 3.....	Plane Trigonometry.....	2
German, French, or Spanish*.....	(Course as approved).....	5
English 1 E.....	Rhetoric I.....	3
Engineering Drawing 1.....	Free-hand and Mechanical Drawing.....	2
Engineering 1.....	Engineering Lectures.....	
Physical Education 1.....	Gymnasium, 3 periods per week.....	

*French preferred.

SECOND SEMESTER, 17 hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Architectural Engineering 2.....	Free-hand Drawing II.....	2
Mathematics 4 E.....	Analytic Geometry and Theory of Equations, (Course as approved).....	5
German, French, or Spanish.....	Rhetoric II.....	2
English 2 E.....	Descriptive Geometry.....	3
Engineering Drawing 3.....	Gymnasium, 3 periods per week.	
Physical Education 2.....		

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ hours credit.

Architectural Engineering 3.....	Architectural Design I.....	3
Architectural Engineering 5.....	History of Architecture I.....	3
Architectural Engineering 7.....	Architectural Drawing I.....	1
Architectural Engineering 9.....	Shades and Shadows.....	1
Mathematics 5 E.....	Calculus I.....	5
Physics 1 E.....	General Physics.....	5
	Technical Report I.....	½

SECOND SEMESTER, 18½ hours credit.

Architectural Engineering 4.....	Architectural Design II.....	3
Architectural Engineering 6.....	History of Architecture II.....	3
Architectural Engineering 8.....	Architectural Drawing II.....	1
Physics 2 E.....	General Physics.....	5
Mathematics 6 E.....	Calculus II.....	3
Civil Engineering 50.....	Surveying.....	3
	Technical Report II.....	½

JUNIOR YEAR.

FIRST SEMESTER, 18½ hours credit.

Architectural Engineering 50.....	Architectural Design III.....	3
Architectural Engineering 56.....	History of Architecture III.....	3
Architectural Engineering 58.....	Building Construction I.....	3
Architectural Engineering 62.....	Architectural Drawing III.....	1
Chemistry 2.....	Advanced Inorganic Chemistry.....	4
Mechanics 50.....	Mechanics.....	5
	Technical Report III.....	½

SECOND SEMESTER, 17½ hours credit.

Architectural Engineering 51.....	Architectural Design IV.....	3
Architectural Engineering 59.....	Building Construction II.....	3
Architectural Engineering 61.....	Building Sanitation.....	1
Architectural Engineering 63.....	Architectural Drawing IV.....	1
Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing Laboratory.....	1
Mechanics 53.....	Graphic Statics.....	2
Mechanical Engineering 54.....	Heating and Ventilation.....	2
	Technical Report IV.....	½

SENIOR YEAR.

FIRST SEMESTER, 18 hours credit.

Architectural Engineering 52.....	Architectural Design V.....	2
Civil Engineering 61.....	Stresses in Framed Structures.....	5
Civil Engineering 65.....	Reinforced Concrete.....	3
Economics 1 E.....	Elements of Economics.....	3
English 59.....	Advanced Composition.....	3
Architectural Engineering 67.....	Office Practice and Specifications.....	2

SECOND SEMESTER, 15 hours credit.

Architectural Engineering 53.....	Architectural Design VI.....	2
Architectural Engineering 57.....	Thesis.....	3
Architectural Engineering 65.....	Steel Construction.....	3
Mechanics 57.....	Hydraulic Cement.....	1
Engineering 52.....	Industrial Administration.....	3
Electrical Engineering 64.....	Electrical Engineering for Architects.....	3

One extended inspection trip is required during the Junior or the Senior year.

ENGINEERING AND ADMINISTRATIVE SCIENCE.

SOPHOMORE YEAR.

FIRST SEMESTER.

- (a) TRANSPORTATION GROUP. Same as in Civil Engineering.
- (b) MANUFACTURING GROUP. Same as in Mechanical, Electrical, Mining, or Chemical Engineering.

SECOND SEMESTER.

- (a) TRANSPORTATION GROUP. Civil Engineering schedule, modified by introduction of Elements of Economics.
- (b) MANUFACTURING GROUP. Mechanical Engineering schedule, modified for those who have not taken Economics 1 E.

JUNIOR AND SENIOR YEARS.

- (a) TRANSPORTATION GROUP. To follow Civil Engineering schedule, with Economics 6 E, Economic History of the United States; 3, Elements of Accounting; and other approved courses substituted for engineering courses.
- (b) MANUFACTURING GROUP. To follow Mechanical Engineering schedule, with the same substitutions of courses in Economics as those indicated above.

The total of courses in Economics, History, and Sociology to be taken by students in Engineering and Administrative Science must amount to not less than 20 and not more than 26 hours.

CURRICULUM.

Leading to the Degree of Bachelor of Science.

REQUIREMENTS FOR ADMISSION.

To be admitted to these courses of study the student must have completed all of the requirements for admission and thirty hours of work in the College. His work should have been selected so that at the close of the year in the College he will have completed, in entrance work and in College work combined, the following specified hours (it is understood that one complete College entrance unit equals five hours work in the University):

- 20 hours in Mathematics.
- 20 hours in English.
- 20 hours in Foreign Language.
- 5 hours in Physics or Chemistry.

If his work has not been selected to fulfill these requirements, the student will be required to make up all deficiencies.

WORK REQUIRED FOR GRADUATION.

The various courses of study outlined below are designed to give approximately the same amount of technical work as is given in the regular four-year period, but the preceding year spent in College work enables the student to obtain a wider general education and to have a little greater freedom in the selection of some of his scientific and engineering studies.

In the selection of his work in foreign language, the student is required to complete not less than five units of foreign language, of which at least two and three-fifths units must be in one modern language.

CIVIL ENGINEERING.

(BASED ON ONE YEAR OF COLLEGE WORK.)

FRESHMAN YEAR.

FIRST SEMESTER, 16 hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Mathematics 4 E.....	Analytic Geometry.....	5
German, French, or Spanish.....	(Course as approved).....	5
Chemistry 2.....	Advanced Inorganic Chemistry.....	4
Engineering Drawing 1.....	Free-hand and Mechanical Drawing.....	2

SECOND SEMESTER, 17 hours credit.

Mathematics 5 E.....	Calculus I.....	5
German, French, or Spanish.....	(Course as approved).....	3
Chemistry 3.....	Qualitative Analysis.....	4
Engineering Drawing 3.....	Descriptive Geometry.....	3
Engineering Drawing 2.....	Machine Drawing.....	2

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ hours credit.

Civil Engineering 1.....	Surveying.....	3
Civil Engineering 5.....	Roads and Pavements.....	2
Mathematics 6 E.....	Calculus II.....	3
Physics 1 E.....	General Physics.....	5
Geology 1.....	Elementary Geology.....	3
Machine Construction 3.....	} Forging and Machine Shop Practice.....	2
Machine Construction 5.....		
	Technical Report I.....	½

SECOND SEMESTER, 18 hours credit.

Civil Engineering 1 (continued).....	Surveying.....	3
Civil Engineering 4.....	Railway Surveying.....	2
English 59.....	Advanced Composition.....	3
Physics 2 E.....	General Physics.....	5
Mechanical Engineering 5.....	Engines and Boilers.....	3
	Optional.....	2

SUMMER WORK.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Civil Engineering 3.....	Summer Field Work, 4 weeks.	

JUNIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

Civil Engineering 51.....	Cartography.....	2
Civil Engineering 55.....	Railway Surveying.....	4
Mechanics 50.....	Mechanics.....	5
Economics 1 E.....	Elements of Economics.....	3
	Optional.....	3
	Technical Report II.....	½

SECOND SEMESTER, 18½ hours credit.

Mechanics 53.....	Graphic Statics.....	3
Civil Engineering 57.....	Railway Location.....	3
Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing Laboratory.....	1
Mechanics 56.....	Hydraulic Laboratory.....	1
Mechanics 55.....	Hydraulics.....	3
	Optional.....	3
	Technical Report III.....	½

SUMMER WORK.

Civil Engineering 51.....	Summer Field Work, 4 weeks.	
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SENIOR YEAR.

FIRST SEMESTER, 18 hours credit.

Civil Engineering 64.....	Masonry.....	2
Civil Engineering 65.....	Reinforced Concrete.....	3
Civil Engineering 61.....	Stresses in Framed Structures.....	5
Civil Engineering 70.....	Sanitary Engineering I.....	3
Civil Engineering 76.....	Seminar.....	½
Electrical Engineering 60.....	Elements of Electrical Engineering.....	3
	Thesis.....	1
	Technical Report IV.....	½

SECOND SEMESTER, 16 hours credit.

Civil Engineering 62.....	Bridge Design.....	4
Engineering 52.....	Industrial Administration.....	3
Mechanics 57.....	Hydraulic Cement.....	1
Civil Engineering 70.....	Sanitary Engineering I.....	2
Civil Engineering 66.....	Reinforced Concrete Design.....	1
	Optional.....	3
	Thesis.....	2

One extended inspection trip is required during the Junior or the Senior year.

For Railway and Structural Engineering options, see page 192 and 193.

Municipal and Sanitary Option.

JUNIOR YEAR.

FIRST SEMESTER, 18½ hours credit.

Mechanics 50.....	Mechanics.....	5
Civil Engineering 73.....	Sanitary Science.....	2
Electrical Engineering 60.....	Elements of Electrical Engineering.....	3
Chemistry 54.....	Water Analysis.....	5
Economics 1 E.....	Elements of Economics.....	3
	Technical Report II.....	½

SECOND SEMESTER, 15 hours credit.

Civil Engineering 75.....	City Planning.....	2
Civil Engineering 52.....	Hydraulics.....	2
Mechanics 55.....	Hydraulic Laboratory.....	3
Mechanics 56.....	Waste and Garbage Disposal.....	1
Civil Engineering 74.....	Strength of Materials.....	1
Mechanics 51.....	Testing Laboratory.....	4
Mechanics 52.....	Optional.....	1
	Technical Report III.....	3
		½

SENIOR YEAR.

FIRST SEMESTER, 18 hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Civil Engineering 64.....	Masonry.....	2
Civil Engineering 65.....	Reinforced Concrete.....	3
Civil Engineering 61.....	Stresses in Framed Structures.....	4
Civil Engineering 70.....	Sanitary Engineering I.....	3
Civil Engineering 76.....	Seminar.....	$\frac{1}{2}$
	Thesis.....	1
	Optional.....	4
	Technical Report IV.....	$\frac{1}{2}$

SECOND SEMESTER, 18 hours credit.

Engineering 52.....	Industrial Administration.....	3
Civil Engineering 70.....	Sanitary Engineering I.....	2
Civil Engineering 72.....	Sanitary Design.....	5
Civil Engineering 71.....	Sanitary Engineering II.....	4
Mechanics 57.....	Cement Laboratory.....	1
Civil Engineering 66.....	Reinforced Concrete Design.....	1
	Thesis.....	2

One extended inspection trip is required during the Junior or the Senior year.

ELECTRICAL ENGINEERING.

(BASED ON ONE YEAR OF COLLEGE WORK.)

FRESHMAN YEAR.

FIRST SEMESTER, 18 hours credit.

Mathematics 4 E.....	Analytic Geometry.....	5
Chemistry 2.....	Advanced Inorganic Chemistry.....	4
German, French, or Spanish.....	(Course as approved).....	5
Engineering Drawing 1.....	Free-hand and Mechanical Drawing.....	2
Machine Construction 1 and	{ Foundry Practice.....	2
Machine Construction 2.....		
	Pattern Making.....	

SECOND SEMESTER, 17 hours credit.

Mathematics 5 E.....	Calculus I.....	5
Chemistry 3.....	Qualitative Analysis.....	4
German, French, or Spanish.....	(Course as approved).....	3
Engineering Drawing 3.....	Descriptive Geometry.....	3
Engineering Drawing 2.....	Machine Drawing.....	2

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ hours credit.

Physics 1 E.....	General Physics.....	5
Mathematics 6 E.....	Calculus II.....	3
Chemistry 70.....	Physical Chemistry I.....	5
Economics 1 E.....	Elements of Economics.....	3
Mechanical Engineering 1.....	Machine Design I.....	1
Machine Construction 3.....	Forging.....	1
	Technical Report I.....	$\frac{1}{2}$

SECOND SEMESTER, 17½ hours credit.

Mathematics.....	(Course to be elected).....	3
Physics 2 E.....	General Physics.....	5
Mechanical Engineering 3.....	Elementary Machine Design.....	3
Mechanical Engineering 4.....	Steam Machinery.....	2
Civil Engineering 50.....	Surveying.....	3
Machine Construction 5.....	Bench Work.....	1
	Technical Report II.....	$\frac{1}{2}$

JUNIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

Electrical Engineering 50.....	Dynamo Machinery.....	3
Electrical Engineering 54.....	Electrical Laboratory.....	$\frac{1}{2}$
Mechanics 50.....	Mechanics.....	5
Physics 52.....	Theory of Electricity.....	3
Physics 56 E-I.....	Electrical Measurements I.....	$\frac{1}{2}$
Mechanical Engineering 52.....	Heat Engine Theory.....	3
	Technical Report III.....	$\frac{1}{2}$

SECOND SEMESTER, 18 hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Electrical Engineering 51.....	Theory of Alternating Currents.....	5
Electrical Engineering 55.....	Electrical Laboratory.....	1½
Mechanical Engineering 53.....	Mechanics of the Steam Engine.....	2
Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing Laboratory.....	1
English 59.....	Advanced Composition.....	3
Physics 56 E-II.....	Electrical Measurements II.....	1½

SENIOR YEAR.

FIRST SEMESTER, 16 hours credit.

Electrical Engineering 52.....	Advanced Dynamo Machinery.....	5
Electrical Engineering 56.....	Advanced Electrical Laboratory.....	1½
Mechanical Engineering 65.....	Power Laboratory.....	2
	Thesis.....	1
	Optional.....	6
	Technical Report IV.....	½

SECOND SEMESTER, 17 hours credit.

Electrical Engineering 57.....	Illuminating Engineering.....	3
Electrical Engineering 58.....	Electric Power Transmission.....	5
Engineering 52.....	Industrial Administration.....	3
	Optional.....	3
	Thesis.....	3

One extended inspection trip is required during the Junior or the Senior year.

MECHANICAL ENGINEERING.

(BASED ON ONE YEAR OF COLLEGE WORK.)

FRESHMAN YEAR.

FIRST SEMESTER, 17 hours credit.

Mathematics 4 E.....	Analytic Geometry.....	5
Chemistry 2.....	Advanced Inorganic Chemistry.....	5
German, French, or Spanish.....	(Course as approved).....	5
Engineering Drawing 1.....	Free-hand and Mechanical Drawing.....	2

SECOND SEMESTER, 17 hours credit.

Mathematics 5 E.....	Calculus I.....	5
Chemistry 3 or 5 E.....	(Optional).....	5 or 3
	(College Optional).....	3 or 5
Engineering Drawing 2.....	Machine Drawing.....	2
Machine Construction 1 and	} Foundry Practice.....	2
Machine Construction 2.....		
	Pattern Making.....	2

SOPHOMORE YEAR.

FIRST SEMESTER, 17½ hours credit.

Mathematics 6 E.....	Calculus II.....	3
Physics 1 E.....	General Physics.....	5
Engineering Drawing 3.....	Descriptive Geometry.....	3
Machine Construction 3 and	} Forging.....	3
Machine Construction 5 and		
Machine Construction 6.....	} Bench Work.....	3
Mechanical Engineering 2.....		
	Machine Tool Work I.....	3
	Mechanism.....	3
	Technical Report I.....	½

SECOND SEMESTER, 17½ hours credit.

Physics 2 E.....	General Physics.....	5
Mechanical Engineering 6.....	Steam Engineering.....	4
Mechanics 50.....	Mechanics.....	5
	Optional.....	3
	Technical Report II.....	½

JUNIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing Laboratory.....	1
Mechanical Engineering 51.....	Thermodynamics.....	4
Mechanical Engineering 64.....	Mechanical Laboratory.....	1
Metallurgy 61 E.....	Metallurgy I.....	3
Machine Construction 7.....	Machine Tool Work II.....	1
Economics 1 E.....	Elementary Economics.....	3
	Technical Report III.....	½

SECOND SEMESTER, 17 hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Mechanical Engineering 50.....	Machine Design II.....	4
Mechanical Engineering 54.....	Heating, Ventilating, and Cooling.....	2
Mechanical Engineering 60.....	Shop Methods.....	2
English 59.....	Advanced Composition.....	3
Mechanical Engineering 66.....	Heat Engine Laboratory.....	2
Machine Construction 8.....	Machine Shop Practice.....	1
	Optional.....	3

SUMMER WORK.

Mechanical Engineering 68.....	Summer Vacation Work.
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SENIOR.

FIRST SEMESTER, 18½ hours credit.

Mechanical Engineering 56.....	Heat Engine Design.....	4
Mechanical Engineering 67.....	Thesis.....	1
Mechanics 55.....	Hydraulics.....	3
Mechanics 56.....	Hydraulic Laboratory.....	1
Engineering 51.....	Manufacturing.....	2
Electrical Engineering 50.....	Dynamo Machinery.....	3
Electrical Engineering 54.....	Electrical Laboratory.....	1½
Mechanical Engineering Option (see below).....		3
	Technical Report.....	½

SECOND SEMESTER, 17½ hours credit.

Mechanical Engineering 67.....	Thesis.....	2
Civil Engineering 50.....	Surveying.....	3
Engineering 52.....	Industrial Administration.....	3
Electrical Engineering 53.....	Alternating Currents.....	3
Electrical Engineering 55.....	Electrical Laboratory.....	1½
Mechanical Engineering Option (see below).....		5

Power Option.

FIRST SEMESTER.

Mechanical Engineering 58.....	Gas Engine and Compressor Design, or	} 3
Mechanics 58.....	Hydraulic Power.....	

SECOND SEMESTER.

Mechanical Engineering 57.....	Steam Engine and Turbine Design, or	} 5
Electrical Engineering 62.....	Central Stations, and Other Engineering Option.....	

Manufactures Option.

FIRST SEMESTER.

Mechanical Engineering 58.....	Gas Engine and Compressor Design.....	3
Mechanical Engineering 61.....	Structural Design.....	3

SECOND SEMESTER.

Mechanical Engineering 57.....	Steam Engine and Turbine Design, or	} 5
Mechanical Engineering 62.....	Industrial Plant Design, and Other Engineering Option.....	

One extended inspection trip is required during the Junior or the Senior year.

MINING ENGINEERING.

(BASED ON ONE YEAR OF COLLEGE WORK.)

FRESHMAN YEAR.

FIRST SEMESTER, 17 hours credit.

Chemistry 2.....	Advanced Inorganic Chemistry.....	5.
Mathematics 4 E.....	Anal. Geometry and Theory of Equations.....	5
Engineering Drawing 1.....	Free-hand and Mechanical Drawing.....	2
Machine Construction 3.....	Forging.....	1
Machine Construction 5.....	Bench Work.....	1
Engineering 1.....	Engineering Lectures.....	3
	Optional.....	3

SECOND SEMESTER, 16 hours credit.

Mathematics 5 E.....	Calculus I.....	5
Chemistry 3.....	Qualitative Analysis.....	5
Engineering Drawing 3.....	Descriptive Geometry.....	3
Engineering Drawing 2.....	Machine Drafting.....	2
Machine Construction 6.....	Machine Tool Work I.....	1

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Geology 2a (or 2).....	Elementary Geology.....	3
Geology 2b.....	Historical Geology.....	2
Civil Engineering 1.....	Elementary Surveying.....	3
Physics 1 E.....	General Physics.....	5
Mechanical Engineering 4.....	Steam Machinery.....	2
Mechanical Engineering 1.....	Machine Drafting.....	1
	Optional.....	2
	Technical Report.....	½
	Mining Journal.....	

SECOND SEMESTER, 19 hours credit.

Mining Engineering 1 or 68.....	Elements of Mining.....	3
Geology 31.....	Mineralogy I.....	5
Civil Engineering 2.....	Higher Surveying.....	3
Physics 2 E.....	General Physics.....	5
English 59.....	Advanced Composition.....	3

JUNIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

Geology 81.....	Petrology I.....	2
Chemistry 51.....	Quantitative Analysis.....	5
Mechanics 50.....	Mechanics.....	5
Geology 71.....	Economic Geology I.....	5
	Technical Report II.....	½
	Mining Journal.....	

SECOND SEMESTER, 17½ hours credit.

Mining Engineering 52.....	Mining Law.....	1
Mining Engineering 50.....	Mine Surveying.....	1
Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing Laboratory.....	1
Metallurgy 53.....	Assaying.....	5
Geology 72.....	Economic Geology II.....	5
	Technical Report III.....	½
	Mining Journal.....	

Metal Option.

SENIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

Mining Engineering 53.....	Ore Dressing I.....	2
Mining Engineering 54.....	Metal Mining.....	2
Mining Engineering 56.....	Mine Plant and Mill Design I.....	2
Mining Engineering 55.....	Mining Hydraulics.....	2
Mining Engineering 67.....	Mineral and Public Land Surveying.....	2
Mining Engineering 64.....	Mining Engineering.....	3
	Technical Report IV.....	½
	Optional.....	4
	Mining Journal.....	

SECOND SEMESTER, 16, 17, or 18 hours credit.

Mining Engineering 57.....	Mine Administration.....	1
Mining Engineering 58.....	Ore Dressing II.....	4
Mining Engineering 59.....	Mine Examination and Reports.....	2
Mining Engineering 63, or	Mine Plant and Mill Designing II.....	3
Mining Engineering 67, or	Advanced Ore Dressing III.....	4
Mineralogy 61.....	Petrography.....	5
Metallurgy 91.....	Metallurgy II.....	3
Engineering 52.....	Industrial Administration.....	2
Mining Engineering 60.....	Thesis.....	2

Coal Mining Option.**SENIOR YEAR.****FIRST SEMESTER, 16 hours credit.**

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Mining Engineering 53.....	Ore Dressing.....	2
Mining Engineering 61.....	Coal Mining I.....	2
Mining Engineering 56.....	Mine Plant and Mill Design I.....	2
Mining Engineering 55.....	Mining Hydraulics.....	2
Mining Engineering 67.....	Mineral and Public Land Surveying.....	3
Mining Engineering 64.....	Mining Engineering.....	3
	Optional.....	2
	Mining Journal.....	

SECOND SEMESTER, 18 hours credit.

Mining Engineering 57.....	Mine Administration.....	1
Mining Engineering 62.....	Coal Mining II.....	3
Mining Engineering 59.....	Mine Examination and Reports.....	2
Mining Engineering 63, or	Mine Plant and Mill Design II.....	3
Mining Engineering 52.....	Industrial Administration.....	2
Mining Engineering 60.....	Thesis.....	2
	Optional.....	5

CHEMICAL ENGINEERING.

(BASED ON ONE YEAR OF COLLEGE WORK.)

NOTE.—Students planning to take the four-year advanced course of study in chemical engineering are very strongly advised to elect chemistry 1 as part of their College work, in addition to the work already recommended in the statement preceding these advanced courses.

FRESHMAN YEAR.**FIRST SEMESTER, 17 hours credit.**

Chemistry 2.....	Advanced Inorganic Chemistry.....	5
Mathematics 4 E.....	Anal. Geometry and Theory of Equations.....	5
Engineering Drawing 1.....	Free-hand and Mechanical Drawing.....	2
	Optional.....	5

SECOND SEMESTER, 17 hours credit.

Chemistry 3.....	Qualitative Analysis.....	5
Mathematics 5 E.....	Calculus I.....	5
Engineering Drawing 3.....	Descriptive Geometry.....	3
Engineering Drawing 2.....	Machine Drawing.....	2
Machine Construction 1.....	Foundry Practice.....	2
Machine Construction 2.....	Pattern Making.....	

SOPHOMORE YEAR.**FIRST SEMESTER, 17½ hours credit.**

Chemistry 51.....	Quantitative Analysis I.....	5
Physics 1 E.....	General Physics.....	5
Mechanics 50.....	Mechanics.....	5
Machine Construction 3 (modified).....	Forging.....	1
Mechanical Engineering 1.....	Machine Drafting.....	1
	Technical Report I.....	½

SECOND SEMESTER, 18½ hours credit.

Chemistry 52.....	Quantitative Analysis II.....	5
Physics 2 E.....	General Physics.....	5
Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing Laboratory.....	1
Mechanical Engineering 3, or	Machine Design.....	3
Mechanical Engineering 5.....	Engines and Boilers.....	
	Technical Report II.....	½

JUNIOR YEAR.**FIRST SEMESTER, 16½ hours credit.**

Chemistry 62.....	Organic Chemistry I.....	5
Metallurgy 90.....	Metallurgy I.....	3
Geology 2a (or 2).....	Elementary Geology.....	3
English 59.....	Advanced Composition.....	3
Metallurgy 93.....	General Metallurgy.....	2
	Technical Report III.....	½

SECOND SEMESTER, 18½ hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Chemistry 63.....	Organic Chemistry II.....	5
Chemistry 80.....	Inorganic Industrial Chemistry.....	3
Metallurgy 91.....	Metallurgy II.....	3
Mineralogy 10.....	Elementary Mineralogy I.....	5
	Optional.....	2
	Technical Report IV.....	½

SENIOR YEAR.

FIRST SEMESTER, 17 hours credit.

Chemistry 81.....	Industrial Organic Chemistry.....	3
Chemistry 70.....	Physical Chemistry I.....	5
Chemistry.....	(Optional).....	4
Economics 1 E.....	Elements of Economics.....	3
	Thesis.....	2

SECOND SEMESTER, 16 hours credit.

Chemistry 71.....	Physical Chemistry II.....	5
Metallurgy 53.....	Assaying.....	3
Engineering 52.....	Industrial Administration.....	3
	Optional.....	2
	Thesis.....	3

One extended inspection trip is required during the Senior year.

ARCHITECTURAL ENGINEERING.

(BASED ON ONE YEAR OF COLLEGE WORK.)

FRESHMAN YEAR.

FIRST SEMESTER, 18 hours credit.

Architectural Engineering 1.....	Free-hand Drawing I.....	2
Mathematics 4 E.....	Anal. Geometry and Theory of Equations.....	5
German, French, or Spanish*.....	(Course as approved).....	5
Chemistry 2.....	Advanced Inorganic Chemistry.....	4
Engineering Drawing 1.....	Free-hand and Mechanical Drawing.....	2

SECOND SEMESTER, 17 hours credit.

Architectural Engineering 2.....	Free-hand Drawing II.....	2
Mathematics 5 E.....	Calculus I.....	5
German, French, or Spanish.....	Course as approved, or Optional.....	3
Chemistry 3.....	Qualitative Analysis, or Optional.....	4
Engineering Drawing 3.....	Descriptive Geometry.....	3

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ hours credit.

Architectural Engineering 3.....	Architectural Design I.....	3
Architectural Engineering 5.....	History of Architecture I.....	3
Architectural Engineering 7.....	Architectural Drawing I.....	1
Architectural Engineering 9.....	Shades and Shadows.....	1
Physics 1 E.....	General Physics.....	5
Mathematics 5 E.....	Calculus II.....	3
Machine Construction 1, and	{ Forging and Bench Work.....	2
Machine Construction 2.....		
	Woodworking and Molding.....	½
	Technical Report I.....	½

SECOND SEMESTER, 18½ hours credit.

Architectural Engineering 4.....	Architectural Design II.....	3
Architectural Engineering 6.....	History of Architecture II.....	3
Architectural Engineering 8.....	Architectural Drawing II.....	1
Physics 2 E.....	General Physics.....	5
Civil Engineering 52.....	Surveying.....	3
	Optional.....	3
	Technical Report II.....	½

JUNIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

Architectural Engineering 50.....	Architectural Design III.....	3
Architectural Engineering 56.....	History of Architecture III.....	2
Architectural Engineering 58.....	Building Construction I.....	3
Architectural Engineering 62.....	Architectural Drawing III.....	1
Mechanics 50.....	Mechanics.....	5
	Optional.....	3
	Technical Report III.....	½

*French preferred.

SECOND SEMESTER, 17½ hours credit.

<i>Course number.</i>	<i>Subject.</i>	<i>Hours credit.</i>
Architectural Engineering 51.....	Architectural Design IV.....	3
Architectural Engineering 59.....	Building Construction II.....	3
Architectural Engineering 61.....	Building Sanitation.....	1
Architectural Engineering 63.....	Architectural Drawing IV.....	1
Mechanics 51.....	Strength of Materials.....	4
Mechanics 52.....	Testing Laboratory.....	1
Mechanics 53.....	Graphic Statics.....	2
Mechanical Engineering 54.....	Heating and Ventilation.....	2
	Technical Report IV.....	½

SENIOR YEAR.

FIRST SEMESTER, 18 hours credit.

Architectural Engineering 52.....	Architectural Design V.....	2
Civil Engineering 61.....	Stresses in Framed Structures.....	5
Civil Engineering 65.....	Reinforced Concrete.....	3
Economics 1 E.....	Elements of Economics.....	3
English 59.....	Advanced Composition.....	3
Architectural Engineering 67.....	Office Practice and Specifications.....	2

SECOND SEMESTER, 15 hours credit.

Architectural Engineering 53.....	Architectural Design VI.....	2
Architectural Engineering 57.....	Thesis.....	3
Architectural Engineering 65.....	Steel Construction.....	3
Mechanics 57.....	Hydraulic Cement.....	1
Engineering 52.....	Industrial Administration.....	3
Electrical Engineering 64.....	Electrical Engineering for Architects.....	3

EQUIPMENT.

The School of Engineering is a part of the University; hence the entire equipment of the University is also equipment of the School of Engineering in all things in which engineering students are concerned. The work of the Engineering School which is common to several schools of the University, such as mathematics, physics, chemistry, languages, etc., is carried on to some extent in buildings and by departments of instruction not exclusively for engineering students; while such work of the School as is technical and exclusively engineering in character is carried on by departments of instruction primarily for engineering students and largely in buildings erected for the special work of the School. Below is described that part of the general equipment of the University which pertains chiefly to the work of this School. For other equipment, see "The College" and descriptions of other schools of the University.

BUILDINGS.

The buildings erected exclusively for engineering work are Marvin Hall, the mechanical laboratory in connection with the power plant, and the Fowler Shops. The work in mining and geology is provided for in Haworth Hall, and courses in chemical and metallurgical subjects are conducted in the chemistry building. For description of the buildings, see the General Information section.

LIBRARIES.

The general University library is available for use of engineering students. The engineering library contains books, periodicals, pamphlets, maps, and manuscripts for use in the study of civil, mechanical, electrical, and architectural engineering. The departmental libraries in chemistry, geology, physics and astronomy, and mathematics are open to engineering students. Large plates and other illustrative material for the use of architecture students are in the reading room of the architectural engineering department.

DRAWING ROOMS.

Drawing rooms in Marvin Hall, furnished with individual tables containing drawers for each student's outfit, cabinets for drawing boards, etc., are provided for the work in general mechanical drawing, machine design, bridge and structural design, and architecture. Drawing rooms in Haworth Hall are similarly provided for the work in mining engineering.

On the walls and in print cases are photographs and drawings of actual construction and blue prints of working drawings for bridges, railroad structures, sewers, waterworks, mine plants, buildings, etc.

LABORATORIES.

Care has been taken to provide laboratory equipment of maximum effectiveness in the teaching of undergraduates. In certain of the laboratories, moreover, the means are at hand for carrying on more advanced research work.

For the work in pure science the laboratories of the College departments of physics, chemistry, and bacteriology are available. In this way engineering students are afforded all necessary opportunities for

gaining familiarity with the most approved methods of carrying on work in the respective branches. Chemical-engineering students continue for a much longer time in the use of the apparatus provided in the department of chemistry than do the other students. Similarly, electrical-engineering students continue in the use of the finer types of electrical measuring instruments, which are provided in the well-equipped laboratories of the physics department. Mining-engineering students, and those following the civil-engineering option in sanitary and municipal work, draw largely also upon the pure-science laboratories, the former mainly in the lines of metallurgy and chemistry, the latter in the chemical and bacteriological examination of water and sewage.

In applied science the laboratories of the School of Engineering next come into use. Particular attention is paid to the work which is given to large numbers of engineering students irrespective of department groups. Among these are: the laboratory for the investigation of the strength of materials, which is provided with a special machine on which loads may be carried to a maximum of 200,000 pounds, and in which several smaller-capacity machines are employed for all student work; the laboratory for experimental work in hydraulics, which is equipped for the usual work in the measurement of flow of water over weirs, through pipes, and for measuring performance of pumps, water motors, etc.; the complete outfit of surveying instruments, by means of which the department of civil engineering carries on its work in connection with the teaching of surveying in all of its various refinements; the laboratory for the study of electrical machines of all kinds, and which is especially well equipped with respect to standardizing apparatus for the most accurate forms of electrical measuring instruments employed in engineering practice; the laboratory devoted to the study of electric-lighting problems, equipped with modern photometer and other apparatus adequate for the work; the laboratory for the study of steam and gas-engine power development, equipped with many representative types of engines, boilers, and other lines of equipment necessary for an actual study of operating conditions; and the machine-construction laboratory which is equipped with machines for the carrying on of all of the ordinary processes in shop work, but which is so employed that students may be considered to be studying methods employed in the production of machines rather than engaged in acquiring manipulative skill.

A third form of laboratory equipment is that applied to special problems in connection with the various lines of specialized work. Each of the departments is equipped in this way, all in very satisfactory measure with respect to undergraduate student work. The civil-engineering department is equipped to give special work for those engaged in the advanced branches of railway surveying, and for the investigation of road-making materials. It owns a complete outfit for its work carried on during the summer surveying-camp period. The department of mechanics is equipped to carry on special investigations in reinforced concrete, and with various other forms of material employed in engineering structures. The electrical-engineering department is provided with necessary equipment for carrying on research work with alternating-current machinery, in telephony, and with electrical measuring instruments. The mechanical-engineering department, in connection with the University power plant, is able to carry on many lines of investigation in steam-power generation, with gas engines, with refrigerating apparatus, and in the study of fuels and lubricating oils. With the proper equipment, and in cooperation with the department of metallurgy, students are enabled to make special studies of tool steels, and the effects of heat upon metal of various kinds. The mining engineering laboratories are equipped for large-scale tests on various ores, for washing coal in ten-ton lots, for the study of fuels and of coal-mine explosions. Students are given mine-surveying practice in the State Mine at Lansing and in the tunnels of the University heating system, and practice in

tunneling and the use of explosives in the experimental mine on the campus.

In the lines of applied chemistry and metallurgy the equipment is of high grade and well adapted to the carrying on of work characteristic of the chemical industries as well as for the study of special metals and the analytical work on ores and the many other forms of material with which the industrial chemist must deal. In the rooms of the architectural-engineering department are deposited the many illustrative drawings, plates, and lantern slides which are of service in the study of architectural forms and in creative designing work, which fills so important a position in the training of the architect.

DESCRIPTION OF COURSES.

ARCHITECTURAL ENGINEERING.

Professors: GOLDSMITH, FRAZIER, RICE (H. A.).

Assistant Instructor: BAILEY (LAF.).

1.—FREE-HAND DRAWING I. Two hours credit. First semester, M. W. F., 1 to 4. Charcoal and pencil drawing from the cast. Frazier.

2.—FREE-HAND DRAWING II. Two hours credit. Second semester, six hours. Theory of perspective, free-hand perspective, shades and shadows. Frazier.

3.—ARCHITECTURAL DESIGN I. Three hours credit. First semester, nine hours. A study of the elementary architectural forms and fundamental construction features, their employment in architectural composition, the classic orders. Drafting-room work and informal lectures. Bailey.

4.—ARCHITECTURAL DESIGN II. Three hours credit. Second semester, nine hours. Continuation of course 3, the application of the orders in elementary design. A study and analysis of architectural composition based on the orders, designed to train the student in the æsthetics of architecture and the fundamentals of design. Drafting-room work and informal lectures. Bailey.

5.—HISTORY OF ARCHITECTURE I. Three hours credit. First semester, three hours, M. W. F., at 10. An analytical study of architectural development of the historic styles, explaining the underlying principles of construction and design, influence of materials, and effects of religious and political conditions. The first semester will include the architecture of Egypt, Assyria, Persia, Greece, and Rome. Illustrated lectures, reading, and sketching. Goldsmith.

6.—HISTORY OF ARCHITECTURE II. Three hours credit. Second semester, three hours, M. W. F., at 10. Continuation of course 5, from the close of Roman supremacy through the periods of Byzantine, Romanesque and Gothic development, and the Renaissance. Illustrated lectures, reading, sketching, and research. Goldsmith.

7.—ARCHITECTURAL DRAWING I. One hour credit. First semester, three hours. Pencil drawing from casts of architectural ornament and historic details, designed to prepare the student for the free use of sketching in architectural composition and design. Bailey.

8.—ARCHITECTURAL DRAWING II. One hour credit. Second semester, three hours. Continuation of course 7. Pen, pencil, and brush work. Bailey.

9.—SHADES AND SHADOWS. One hour credit. First semester, three hours. Application of the principles of descriptive geometry in casting conventional shadows. Conventional rendering of architectural subjects. Goldsmith.

50.—ARCHITECTURAL DESIGN III. Three hours credit. First semester, nine hours. Continuation of course 4. Problems in theoretical design, alternating with problems in constructive design, working drawings and details, applying the knowledge gained in course 58. Bailey.

51.—ARCHITECTURAL DESIGN IV. Three hours credit. Second semester, nine hours. Continuation of course 50. Problems in design of increased importance, alternating with problems in constructive design based on course 59. Beaux Arts Institute of Design competitions. Bailey.

52.—ARCHITECTURAL DESIGN V. Two hours credit. First semester, six hours. A course of engineering design combining problems in engineering with architectural composition and applying the technical knowledge gained in the engineering courses. Goldsmith, Bailey.

53.—ARCHITECTURAL DESIGN VI. Two hours credit. Second semester, six hours. Continuation of course 52. Goldsmith, Bailey.

56.—HISTORY OF ARCHITECTURE III. Two hours credit. First semester, two hours. Continuation of course 6, including the classic and Gothic revivals and modern architecture in Europe and the United States. Illustrated lectures, reading, sketching, and research. Goldsmith.

57.—THESIS. Three hours credit. Second semester, six hours. An extended problem in architectural-engineering design requiring complete plans, elevations, section and construction details, with outline specifications of building materials and methods. The subject may be chosen by the student with the approval of the professor of architecture. Goldsmith.

58.—BUILDING CONSTRUCTION I. Three hours credit. First semester, three hours, M. W. F., at 11. A study of the principles of wooden construction and their application in structural design, working drawings, and details. This course considers building and finishing woods, framing of wooden buildings, details of exterior finish, interior woodwork, and cabinet work. Lectures, reading, and drafting-room work. Goldsmith.

59.—BUILDING CONSTRUCTION II. Three hours credit. Second semester, three hours, M. W. F., at 11. A study of the principles of masonry construction and their application. This course considers building stones, brickwork, terra cotta, simple cast-iron and steel work, fireproofing, and plastering. Lectures, reading, and drafting-room work. Goldsmith.

61.—BUILDING SANITATION. One hour credit. Second semester. Plumbing sewerage, water-supply, and plumbing fixtures. Lectures, reading, and drafting-room work. Goldsmith.

62.—ARCHITECTURAL DRAWING III. One hour credit. First semester, three hours. Continuation of course 8. Bailey.

63.—ARCHITECTURAL DRAWING IV. One hour credit. Second semester, three hours. Continuation of course 62. Bailey.

65.—STEEL CONSTRUCTION. Three hours credit. Second semester, nine hours, M. Tu. W., at 1. A course in steel framing of buildings. Drafting-room work. H. A. Rice.

67.—OFFICE PRACTICE AND SPECIFICATIONS. Two hours credit. First semester, two hours. A course dealing with the essentials of office practice and of specification writing. Goldsmith.

BACTERIOLOGY.

Assistant Professor: YOUNG (C. C.).

53E.—SANITARY WATER ANALYSIS. Five hours credit. First semester, daily, 8 to 10. (See chemistry 54.) Part of the semester will be devoted to bacteriological technic and reading along general lines, followed by special work on bacteriology of water and sewage. The remainder of the semester will be spent in chemical quantitative analysis of water and sewage and interpretation of results of sanitary tests. Designed for students in sanitary engineering, but open to others who have had chemistry 3, if the instructor's consent has been secured in advance. C. C. Young.

For other courses in Bacteriology see The College.

CHEMISTRY.

Professors: BAILEY, CADY, DAINS, WHITAKER.

Associate Professor: ALLEN.

Assistant Professors: YOUNG (C. C.), FARAGHER,
LONG, BRUCKMILLER, ESTES.

Instructors: SEIBEL, BERGER, RAMSEY, LAIRD, RADER.

Fees will be charged in the various courses to cover cost of materials, breakage, etc.

2.—INORGANIC CHEMISTRY. Four or five hours credit. First semester. Lectures and recitations, M. W. F., 8 or 9. Laboratory, Tu. Th., 8 to 10 or 1 to 3. Chemical and mining-engineering students take four hours laboratory, others two hours. Cady, Faragher, and assistants.

3.—INORGANIC CHEMISTRY AND QUALITATIVE ANALYSIS. Four or five hours credit. Second semester. Lectures and recitations, Tu. Th., 8 or 9. Laboratory, M. W. F., 8 to 10 or 1 to 3. Chemical-engineering students take six hours laboratory, others four hours. Prerequisite, course 2. Cady, Faragher, and assistants.

5.—ENGINEERING CHEMISTRY. Three hours credit. Second semester. Recitations, Tu. Th., at 9; laboratory, F., 1 to 4. Required of mechanical- and civil-engineering students. Cady and assistants.

51.—QUANTITATIVE ANALYSIS I. Two, three, or five hours credit. Both semesters, 10 to 12 or 1 to 3. A general course covering the fundamental principles of gravimetric and volumetric analysis. Five-hour course required of chemical- and mining-engineering students. Prerequisite, course 3. Allen and assistants.

52.—QUANTITATIVE ANALYSIS II. Two, three, or five hours credit. Both semesters, 1 to 3, or by appointment. In the latter part of the course the volumetric analysis of ores and metallurgical products will be taken up. In connection with this work some specialty, such as cement, glass, or packing-house industry, rock analysis, paint analysis, etc., may be pursued. Five-hour course required of chemical-engineering students. Prerequisite, course 51. Allen and assistants.

52A.—SANITARY WATER ANALYSIS. Three hours credit. Second semester, 10 to 12. Laboratory work in the sanitary analysis of water and sewage. Lectures and assigned readings on the interpretation of results and upon the methods used. Especially designed to fit students for commercial positions in this line of work. Prerequisite, course 51. Bruckmiller.

52B.—BOILER-WATER ANALYSIS. Two hours credit. Second semester, 10:30 to 12:30. Laboratory work in the analysis and softening of boiler waters. Lectures and assigned readings on softening problems and commercial practice in water treatment. Especially designed to fit students for commercial positions in this line of work. Prerequisite, course 51. Bruckmiller.

52C.—GAS ANALYSIS. Two hours credit. First semester, by appointment. A laboratory course of general gasometric methods, analysis of flue gases, artificial and natural gases. Prerequisite, course 51. Allen.

52D.—FOOD ANALYSIS. Three hours credit. Both semesters, by appointment. Lectures and laboratory. Prerequisites, courses 51 and 61 or 62. Long.

52E.—OIL ANALYSIS. Two hours credit. First semester, by appointment. The examination of petroleum and products, lubricating oils, asphalts, and road materials. Prerequisite, course 51. Allen.

52F.—IRON AND STEEL ANALYSIS. Two hours credit. Second semester, by appointment. Analysis of special steels and alloys. Prerequisite, course 51. Allen.

52G.—THE CHEMISTRY OF MILLING AND BAKING. Two hours credit. Second semester, by appointment. Designed to meet the requirements of chemists desiring to carry on control work in the milling industry. Prerequisites, courses 51 and 61 or 62. Long.

52H.—INDUSTRIAL ORGANIC ANALYSIS. Two hours credit. Second semester, by appointment. Includes analyses of soap, paper, leather, starches, etc. Prerequisites, courses 51 and 61 or 62. Estes.

52I.—WET ASSAYING. Two hours credit. Second semester, by appointment. Volumetric methods for the estimation of copper, lead, zinc, manganese, iron, silver, gold, etc. Prerequisite, course 51. Allen.

52J.—ELECTROLYTIC ESTIMATION OF METALS. Two hours credit. Second semester, by appointment. A laboratory course. Prerequisite, course 51. Allen.

54.—SANITARY WATER ANALYSIS. Five hours credit. First semester, 8 to 10. (Bacteriology 53E.) Open to students in engineering; not open to chemical engineers. Part of the semester will be devoted to bacteriological technic and reading along general lines, followed by special work on the bacteriology of water and sewage. The remainder of the semester will be spent in chemical quantitative analysis of water and sewage and interpretation of results of sanitary tests. Young, Bruckmiller.

62.—ELEMENTARY ORGANIC CHEMISTRY. Five hours credit. First semester. Recitations, M. W. F., at 9. Laboratory, Tu. and Th. mornings. Required of chemical-engineering students. In this course the aliphatic series only is discussed, the aromatic series being reserved for organic chemistry 63. Prerequisite, 10 hours chemistry. Dains.

63.—ADVANCED ORGANIC CHEMISTRY. Five hours credit. Second semester. Recitations, M. W. F., at 9. Laboratory, Tu. and Th. mornings. Aromatic series. Required of chemical-engineering students. Prerequisite, course 62. Dains.

70.—PHYSICAL CHEMISTRY I. Five hours credit. First semester, six hours, at 10. A course paying special attention to electrochemistry. Lectures, recitations, and laboratory work. Prerequisites, course 3 or course 51, physics 1E and 2E, and mathematics 5E. Required of chemical- and electrical-engineering students; optional for mining engineers. Cady.

71.—PHYSICAL CHEMISTRY II. Five hours credit. Second semester, seven hours, at 10. Lectures, recitations, and laboratory work. Required of chemical-engineering students. Cady.

80.—INORGANIC INDUSTRIAL CHEMISTRY. Three hours credit. Second semester, at 11. Required of Junior chemical-engineering students. A study of the inorganic industries, including such topics as the manufacture of acids, alkalies and other chemicals, fertilizers, paints and pigments, glass and cement, and the purification of water. Prerequisites, courses 2 and 3. Whitaker, Bruckmiller.

81.—ORGANIC INDUSTRIAL CHEMISTRY. Three hours credit. First semester, at 9. Required of Senior chemical-engineering students. A study of the organic industries, including such topics as the refining of petroleum, the distillation of wood and coal, packing houses, fermentation, soaps, leather, paper, starches, sugars, dyestuffs, etc. Prerequisites, courses 2, 3, and 62. Whitaker, Estes.

CIVIL ENGINEERING.

Professors: RICE (H. A.), Chairman, WILLIAMS.

Associate Professors: HASKINS, MCNOWN.

Assistant Professors: BROWN (F. L.), ROBERTS,
JONES (J. O.).

1.—ELEMENTARY SURVEYING. Three hours credit. First semester, one hour of class work, F., at 10 and 11; two hours of field work, computation and plotting, M. and W., from 1 to 4. Required of civil- and mining-engineering Sophomores. Use and care of engineer's chain, transit, and level. Adjustments of transit and level. Land surveying methods and computations. Prerequisite, mathematics 3. McNown.

2.—HIGHER SURVEYING. Three hours credit. Second semester, F. at 11, with field work W. and F., at 1 to 4. Required of civil- and mining-engineering Sophomores. Topographic and hydrographic surveying. Control of surveys, including introduction to engineering astronomy. Prerequisite, civil engineering 1. McNown.

3.—SUMMER FIELD WORK. Ten hours a day for four weeks at the close of the college year is required of Sophomore civil-engineering students, and the same for two weeks is required of Sophomore mining-engineering students. A topographical survey of an area is made from a camp. Practice in taking topography by transit and stadia, and by plane table, measurement of a basis line, triangulation, leveling, and determination of azimuth latitude and time, constitute the work. Prerequisite, civil engineering 2. McNown.

4.—RAILWAY SURVEYING. Two hours credit. Second semester, Tu. Th., at 9. Required of civil-engineering Sophomores. A study of railway curves and earthwork, with field exercises. Prerequisite, civil engineering 1. McNown.

5.—ROADS AND PAVEMENTS. Two hours credit. Second semester, Sophomore year, Tu. Th., at 11. A study of methods used in the construction and improvement of country roads and city streets. An extended study of paving materials and of the principles governing the selection of a pavement. Same time given to laboratory testing of materials. Prerequisite, civil engineering 1, 2, and 3. Williams.

50.—ELEMENTARY SURVEYING. Three hours credit. Both semesters. Two hours of class work, Tu. Th., at 9 in the first and at 8 in the second semester. One hour of field from 1 to 4, on M. in the first and on Tu. in the second semester. Required of Senior electrical, and Sophomore architectural and mechanical students. A brief course based on course 1 and 2. McNown and Roberts.

51.—CARTOGRAPHY. Two hours credit. First semester, Th. Fri., from 1 to 4. Required of Junior civil-engineering students. Map projection and the preparation of an accurate topographical map based on the field maps prepared in civil engineering 3. Prerequisite, civil engineering 3. McNown.

52.—CITY PLANNING. Two hours credit. Second semester, W. F., at 8. Required of Junior sanitary students, and optional to Senior civil-engineering students. A study of city planning from the modern viewpoint, under such topics as city planning abroad, the American city, design of streets and street systems, parks and playgrounds, civic centers, water features, methods of acquiring land, and legislation. Lectures and assigned readings. McNown.

53.—GEODESY. Three hours credit. First semester. Two hours in classroom and one in field, and computation. By appointment. Optional to Seniors. A brief study of the construction, use, and adjustment of the higher instruments of precision, and their use in the determination of the size and figure of the earth, including a study of the application of the method of least squares to the adjustment of observations. Prerequisite, civil engineering 3. McNown.

55.—RAILWAY SURVEYING. Four hours credit. First semester, Junior year, Tu. Th., at 9; M. W., at 1. A study of methods of laying out and constructing railways, with field practice consisting of a location survey of a line of sufficient length to familiarize the student with standard methods of doing such work; calculation of waterways; bridge surveys; yards, turnouts, and easement curves. Prerequisites, civil engineering 1, 2, 3, and 4. Williams.

57.—RAILWAY LOCATION. Three hours credit. Second semester, Junior year, M. W. F., at 11. The principles involved in the economic location and construction of railways. Analysis of traffic and operating expenses. The influence of proposed changes in location upon the amount of total revenue, the fixed charges, the operating expense, and the dividend-paying capacity of the road. Prerequisite, civil engineering 55. Williams.

58.—RAILWAY TERMINALS AND SIGNALING. Two hours credit. First semester, Senior year, Tu. Th., at 8. A general study of terminal problems, the design of yard layouts and of terminal structures. Some time given to signal engineering. Prerequisite, civil engineering 55. Williams.

59.—RAILWAY CONSTRUCTION AND MAINTENANCE. Three hours credit. Second semester, Senior year, M. W. F., at 10. An advanced course in railway engineering, covering tunneling, economic handling of materials, masonry structures, trestles, timber preservation, as well as the theory and practice of railway maintenance. Prerequisite, civil engineering 55. Williams.

61.—STRESSES IN FRAMED STRUCTURES. Five hours credit. First semester, five hours, at 11. Analytical and graphical calculation of stresses in framed structures under various forms of loading. This course must be preceded by course 51 in mechanics. H. A. Rice.

62.—BRIDGE DESIGNING. Four hours credit. Second semester, eight hours, 1 to 4. A study in bridge details and the dimensions of parts. Students work out designs for a plate girder and a simple truss. Must be preceded by course 61. H. A. Rice.

64.—MASONRY. Two hours credit. First semester, Senior year, Tu. Th., at 10. Stone and brick masonry; the science of proportioning concrete; foundations, including pile driving, cofferdams, pneumatic caissons, etc.; dams, retaining walls, piers and abutments, masonry bridges. Prerequisite, mechanics 50 and 51. Williams.

65.—REINFORCED CONCRETE. Three hours credit. Senior, first semester, M. W. F., at 10. A course in the modern theory and practice in the design of beams, floor slabs, columns, conduits, retaining walls, arches, and other forms of reinforced concrete construction. Mathematical theory, study of plans, and design of typical structures. Prerequisite, mechanics 51. H. A. Rice.

66.—REINFORCED CONCRETE DESIGN. One hour credit. Second semester, Senior. This course supplements course 65. Designs of beams, slabs, retaining walls, etc., together with a complete analysis of a reinforced-concrete arch, are made. Prerequisite, civil engineering 65. H. A. Rice.

67.—HIGHER STRUCTURES. Three hours credit. Second semester, Senior, M. W. F., at 9. An advanced course in bridges, including swing bridges, cantilever bridges, suspension bridges, and arches. Some work will be given in calculations of deflections and statically indeterminate stresses. H. A. Rice.

70.—SANITARY ENGINEERING I. Five hours credit. First semester, three hours, M. W. F., at 11. The collection and distribution of water supplies. Requisites of supply as to quality and quantity. Design of distribution, collection and storage works. Second semester, two hours,

T. Th., at 11. An elementary course in the collection, removal and disposal of city sewage. Principles of the design and construction of sewers and storm drains. Prerequisite, mechanics 55. Jones, J. O.

71.—SANITARY ENGINEERING II. Four hours credit. Second semester, four hours, M. Tu. W. Th., at 9. A more detailed study of the subjects treated in course 59. The purification of public water supplies and the treatment of sewage. Haskins.

72.—SANITARY ENGINEERING DESIGN. Five hours credit. Second semester, five hours, at 1. An advanced course to be taken simultaneously with course 71. The student works out, by practical problems the principles learned in courses 70 and 71. Haskins.

73.—SANITARY SCIENCE AND PUBLIC HEALTH PROBLEMS. Two hours credit. First semester, two hours, Tu. Th., at 9. A broad general view of the large body of sanitary science upon which the modern practice of sanitation is based. The effects of good practice in such matters as public water supply, sewerage and drainage, state and federal control over the pollution of streams, vital statistics. Haskins.

74.—WASTE AND GARBAGE DISPOSAL. One hour credit. Second semester, one hour, M., at 11. A lecture course in the practice of street cleaning, refuse and garbage collection and disposal. Haskins.

75.—IRRIGATION AND DRAINAGE ENGINEERING. Three hours credit. Second semester. Optional to Seniors. Impounding, diversion, conveyance, measurement and duty of water; irrigation structures; irrigation law; drainage factor; design of drainage system; assessment of benefits; drainage law. McNown.

76.—SEMINAR. One-half hour credit. First semester, Senior year. Preparation and presentation of technical papers. Williams.

ECONOMICS.

Professor: BOYNTON.
Assistant Professor: CATELL.

1E.—ELEMENTS OF ECONOMICS. Three hours credit. First semester, M. W. F., at 11. This course endeavors to explain the general laws of man's relation to wealth. Special attention is given to the parts of the subject of special interest to engineering students, such as corporations, the economic activities of municipalities, organized labor, and the general labor problem.

3.—ECONOMIC AND FINANCIAL HISTORY OF THE UNITED STATES. Three hours credit. Second semester, at 9. Attention is given to colonial agriculture, industry, and trade as an introduction to the course. After 1789, the main lines of study are the banking, transportation, and tariff history of the United States, with especial attention to the development of the natural resources, the rise of manufactures, and the expansion of corporate methods. Prerequisite, course 1. Boynton.

ACCOUNTING I AND II. See Economics 64 and 65.

COST ACCOUNTING. See Economics 66.

ELECTRICAL ENGINEERING.

Professor: SHAAD.
Assistant Professor: JOHNSON (F. E.).
Instructor: SCHOOLEY.

Courses 50 to 52, and 54 to 58, inclusive, and 61 are required of all electrical-engineering students. Courses 50, 53, 54, and 55 are required of mechanical-engineering students. Courses 59 and 62 are optional for electrical-engineering students.

50.—DYNAMO MACHINERY. Three hours credit. Junior, first semester, three hours, at 10 for electrical-engineering students, and at 8 for Senior mechanical-engineering students. Theory of direct-current generators and motors. Prerequisites, physics 1E and 2E.

F. E. Johnson.

51.—THEORY OF ALTERNATING CURRENTS. Five hours credit. Juniors, second semester, five hours, at 8, for electrical-engineering students. A mathematical treatment of alternating-current phenomena and the theory of alternating-current machinery, fundamental types. Prerequisite, course 50.

Shaad.

52.—DYNAMO MACHINERY. Five hours credit. Senior, first semester, five hours, at 8. Advanced theory of alternating-current machinery.

Shaad.

53.—THEORY OF ALTERNATING CURRENTS. Three hours credit. Second semester, three hours, M. W. F., at 11 for Senior mechanical-engineering students. A study of the theory of alternating currents and alternating-current machinery, together with a discussion of motor applications. Prerequisite, course 50.

F. E. Johnson.

54.—ELECTRICAL LABORATORY. One and one-half hours credit. Junior, first semester, three hours, two days per week on alternate weeks, 1 to 4. An experimental course for the purpose of illustrating the principles of direct-current dynamo machinery and acquainting the student with the types and performance of direct-current apparatus. Must be preceded or accompanied by course 50.

Schooley.

55.—ELECTRICAL LABORATORY. One and one-half hours credit. Junior, second semester, three hours, two days per week on alternate weeks, 1 to 4. A continuation of course 54. Must be preceded or accompanied by course 51. More advanced work with direct-current machinery is given and experiments with alternating-current apparatus are introduced. Some time is devoted to the calibration of electrical instruments.

Schooley.

56.—ELECTRICAL LABORATORY. One and one-half hours credit. Senior, first semester, three hours, two days per week, 1 to 4. Advanced experiments with electrical machinery and the testing of machines, chiefly of alternating-current types. Must be accompanied by course 52.

F. E. Johnson, Schooley.

57.—ILLUMINATING ENGINEERING. Three hours credit. Senior, second semester, three hours, Tu. Th., at 11. A course in illumination and photometry, in which the available light sources are studied and the methods of application to artificial illumination of streets and buildings are discussed. Laboratory and field work in the measurement of light sources and illumination.

F. E. Johnson.

58.—ELECTRIC POWER TRANSMISSION AND ELECTRIC RAILWAYS. Five hours credit. Senior, second semester, five hours, at 9. A series of lectures and recitations devoted to the study of the principles involved and the methods used in the design of transmission and distributing systems and the theory and practice of the design, construction, and operation of electric-railway systems. Prerequisite, course 52.

F. E. Johnson.

59.—ELEMENTARY TELEPHONY. Five hours credit. Second semester, five hours by appointment. Lectures, recitations, and laboratory work. The principles that underlie all telephone apparatus, and practical experiments with the fundamental telephone transmitters, receivers, and central-station arrangements. Optional for Juniors or Seniors.

Shaad.

60.—ELEMENTS OF ELECTRICAL ENGINEERING. Three hours credit. First semester, at 9. A course covering the general field of electrical engineering, and prepared especially for civil-engineering students. Junior or Senior year.

Shaad.

61.—PROFESSIONAL THESIS. Senior, first semester, three hours, and second semester, nine hours, by appointment. Shaad, or other instructors, according to the line of work chosen.

62.—CENTRAL STATIONS. Three hours credit. Three hours in the classroom, M. W. F., at 10, and one period in the drafting room each week. A study of the design, construction, operation, and management of central electrical stations and substations. Shaad.

63.—ADVANCED ELECTRICAL LABORATORY. Five hours credit. Seniors, second semester, by appointment. A continuation of course 56. More advanced and extended experiments with electrical machinery and circuits, introducing the experimental study of transient electrical phenomena. F. E. Johnson.

64.—ELECTRICAL ENGINEERING FOR ARCHITECTS. Three hours credit. Second semester, three hours, at 9. A course covering electrical installations for buildings. For students in architectural engineering, either Junior or Senior year. Shaad.

ENGINEERING.

Dean: WALKER.

Professor: SHAAD.

Assistant Professor: GARVER.

1.—ENGINEERING LECTURES. First semester, Tu., at 3. A course of lectures given to Freshmen during the first semester. The purpose is twofold: first, to give the student a more adequate idea of engineering as a profession; second, to assist those who have not decided upon the courses of study to be pursued to gain a more definite conception of the field covered in each. About one-third of the course is given by the Dean and the remainder by other members of the engineering faculty.

2.—COMMERCIAL ENGINEERING. Three hours credit. Second semester, sophomore, M. W. F., at 9; the Wednesday session continuing three hours as a laboratory period. An introduction to business problems with special reference to production, distribution, and marketing. Principles of accounting and cost finding as applied to machine building enterprises. Walker.

51.—MANUFACTURING. Two hours credit. First semester, Senior, Tu. Th., at 8. Manufacturing processes employed in certain typical industries; elements of cost; power as a factor in costs; power applications; engineering practice in the industries with especial reference to selection of equipment. Garver.

52.—INDUSTRIAL ADMINISTRATION. Three hours credit. Second semester, at 8. Development of modern industrial systems; forms of ownership—partnerships and corporations; contract principles, and practice in contract writing for engineering work; organization of transportation and manufacturing companies; analysis of costs; labor wage systems. Special lectures on real property, agency, and torts. Mining-engineer students are allowed to take a portion of the course for two hours credit. Shaad.

ENGINEERING DRAWING.

Professor: HOOD.

Assistant Professors: GARVER, JONES (J. O.).

Instructor: SCHOOLEY.

Assistant Instructor: JAKOWSKY.

1.—FREE-HAND AND MECHANICAL DRAWING. Two hours credit. Freshman, both semesters; six hours or twelve hours; first semester, M. W. F., 8 to 10; or Tu. Th., 8 to 11; or M. Tu. W. Th., 1 to 4; or F., 1 to 5, and Sat., 8 to 11. Second semester, M. W. F., 8 to 10; or M. W., 1 to 4. Engineering lettering in pencil and in ink. Free-hand working sketches and perspective sketches of simple machine parts. Working

drawings of simple machine parts. Penciling, tracing, and blue-printing. Detailing machine parts from assembly drawings.

Hood, Garver, Jakowsky.

2.—MACHINE DRAWING. Two hours credit. Freshman, eighteen weeks or nine weeks of both semesters; six hours or twelve hours. Same hours as in course 1. Sketches of machine parts and preparation of working drawings; detailing of machines from sketches, notes, assembly drawings, and assembled machines; tracing and blue-printing; notes and lectures on drafting-room methods. Each student prepares complete drawings for some simple machine.

Hood, Garver, Jakowsky.

3.—DESCRIPTIVE GEOMETRY. Three hours credit. Freshman, second semester, three hours, M. W. F., at 8, 9, 10, 11, and 3; also first semester, at 11. Principles of projection. Execution of a large number of original exercises.

Hood, J. O. Jones, Schooley, Jakowsky.

ENGLISH LANGUAGE AND LITERATURE.

Associate Professor: RAYMOND.

Instructor: WATTLES.

The instruction in this department, while in essentials parallel to that in the College, is shaped with special reference to the other work of engineering students. Three of the courses here numbered are required before graduation; for students who wish to spend more time in work of this kind appropriate classes in the College are open.

1E.—RHETORIC I. Three hours credit. First semester, at 8, 9, 10, 11, 2, and 3; second semester, at 11. Written exercises, with study of language usage. Required of all Freshmen.

Raymond, Wattles.

2E.—RHETORIC II. Two hours credit. Second semester, at 8, 9, 10, 11, 2, and 3. Continuation of course 1E.

Raymond, Wattles.

59.—ADVANCED COMPOSITION I. Three hours credit. Both semesters; first semester, at 8 and 11; second semester, at 8 and 9. Practice in the gathering and analyzing of material, and in the presenting of information and opinion in written papers. Required of all engineering students, one semester, in Junior or Senior year.

Raymond.

59A.—ADVANCED COMPOSITION II. Three hours credit. By appointment. Continuation of course 59, with special regard to writing for publication. Optional for Seniors.

Raymond.

GEOLOGY.

Professor: HAWORTH.

Assistant Professors: TODD, MOORE, HAYNES.

2a (or 2).—ELEMENTARY GEOLOGY. Three hours credit. Each semester, at 8 or 10. A study of the elements of the science, including a general outline of geologic principles and agencies. An acquaintance with elementary chemistry is very desirable in this course.

Moore, Haynes.

2b.—HISTORICAL GEOLOGY I. Two hours credit. Each semester, at 8 or 10. A study of the more important events in the past history of the earth, as a basis for the correct understanding of the present geography, rock structure, and natural resources of the world. This course must be accompanied by 2a (or 2). Required of mining engineers.

Moore.

4.—FIELD GEOLOGY. Two hours credit. Second semester, Saturday mornings. Field work and reports on the physiography and geology of Lawrence and vicinity. An introductory course for those who wish to learn the methods of field work. Must be preceded or accompanied by geology 2a (or 2) and 2b.

Todd, Moore, Haynes.

31.—MINERALOGY I. Five hours credit. Second semester, M. Th. F., 1 to 4. Six hours laboratory work. A brief course in crystallography, and descriptive and determinative mineralogy, including blow-pipe analysis. The characteristics of about 150 important minerals will be studied. Prerequisites, elementary chemistry. Haynes.

50.—GEOLOGIC PROCESSES. Three hours credit. First semester, at 11. An advanced course comprising a critical investigation of geologic agencies and the results of their work. The development of land forms and the principles of sedimentation, and the physiographic history of specific areas. Library and laboratory study, with special opportunity for training in the methods of geologic work. Prerequisites, geology 2a (or 2) and 2b, and elementary physics and chemistry. Moore, Haynes.

51.—GEOLOGIC AND TOPOGRAPHIC MAPS. Two hours credit. First semester, at 11. A study chiefly in the laboratory designed to give the student a thorough understanding of geologic and topographic maps and the ability to interpret them correctly. Prerequisite, geology 2a (or 2) and 2b. Moore, Haynes.

52.—FIELD GEOLOGY. Six hours credit. Summer session. A five weeks' course devoted to a study of the geology and physiography of parts of Kansas and Colorado, with detailed investigation of special areas. Prerequisite, geology 2a (or 2) and 2b. Registration only after consultation with the instructors. Moore, Haynes.

53.—FIELD GEOLOGY REPORT. An additional credit of three hours will be given for a satisfactory thesis based upon the work of course 52.

61.—HISTORICAL GEOLOGY II. Five hours credit. Second semester, at 9. A study of the geologic history of the earth, the evolution and development of the continents, stratigraphy, and the history of plant and animal life from their earliest known beginnings to the present. The geologic significance and use of fossils in the identification and correlation of stratified rocks. Prerequisite, geology 2a (or 2) and 2b. Elementary zoölogy very desirable. Moore.

62.—INVERTEBRATE PALEONTOLOGY I. Five hours credit. First semester, by appointment. A study of the introduction and succession of fossil faunas, their composition, and geographic distribution. Practical exercise in the identification of faunas of different geologic ages. A classroom and laboratory course. Prerequisite, geology 2a (or 2) and 2b. Moore.

71.—ECONOMIC GEOLOGY I. *Metals*. Five hours credit. First semester, at 10. A general study of the metallic products of the mine, considered from a scientific and a practical standpoint, including the nature, origin, amount, and geographic and geologic distribution of the same. Prerequisites, elementary chemistry and geology 2a (or 2) and 2b. Lectures and library work. Haworth, Haynes.

72.—ECONOMIC GEOLOGY II. *Oil, Gas, and Coal*. Five hours credit. Second semester, at 10. A careful study of oil and gas, regarding nature, origin, geography and geology, and economic importance. Much attention is paid to field conditions surrounding different oil fields and best methods for understanding same. Prerequisites, elementary chemistry and geology 2a (or 2) and 2b. Haworth, Haynes.

73.—STRUCTURAL AND DYNAMIC GEOLOGY. Five hours credit. First semester, at 2. A careful study of geological dynamics and results of dynamic actions, particularly on stratified rocks, and latest and best methods for field operations while studying same. Prerequisite, geology 2a (or 2) and 2b. Haworth.

81.—PETROLOGY I. Two hours credit. First semester, by appointment. Lithology, structure, texture, mineral and chemical composition, and the manner of formation and occurrence of igneous, sedimentary, and metamorphic rocks; geological problems confronting mining engineers,

changes in grade, or character, of ore deposits. Effect of faulting, folding and intrusions of igneous rocks. Prerequisite, geology 2a (or 2) and 2b. Haynes.

82.—PETROGRAPHY. Three hours credit. First semester, by appointment. This course consists of training in the methods of petrographic study and includes the macroscopic and microscopic examination of the principal rock types and a consideration of the theories of modern petrology. Prerequisites, geology 2a (or 2) and 2b. Haynes.

GERMAN.

Assistant Professors: BRIGGS, JONES.

1.—ELEMENTARY GERMAN.—ESSENTIALS OF GRAMMAR. Five hours credit. First semester, at 8. The first sixty lessons of Mosher and Jenney's Lern- und Lesebuch. Jones.

2.—PROSE READINGS. Five hours credit. Second semester, at 8. Mosher and Jenney's Lern- und Lesebuch completed. Reading of selected prose texts. Jones.

3B.—SCIENTIFIC GERMAN. Five hours credit. First semester, at 9. A thorough review of grammar, Das Edle Blut or equivalent text, forty to fifty pages, as introductory reading matter followed by a scientific German reader. The aim of the course is to introduce the student to the style and vocabulary of scientific German and develop the ability to read simple scientific writings. Briggs.

4B.—SCIENTIFIC GERMAN. Three hours credit. Second semester, at 9. Reading of scientific German texts in class and assigned readings on selected topics outside of class. The aim of this course is to develop the rapid reading of more advanced scientific German in special fields. Briggs.

MACHINE CONSTRUCTION.

Assistant Professor: JONES (F. E.).*

Instructors: HARTLEY, WHITE, ROCKLUND, FORNEY.

The work given is designed to suit the needs of engineering students. It consists of practice work following demonstrations and recitations in the classroom. Textbook preparation and note writing are required in the class work. One hour of each regularly assigned weekly period is devoted to classroom work during a portion of the semester. In the advanced courses attention is given to modern methods of welding, heat treatment of high-carbon steels, machine-shop construction, the grouping of machines, and methods followed in standardizing production.

1.—FOUNDRY PRACTICE. One hour credit. Both semesters, three hours per week. Molding, and management of the cupola furnace and brass furnace. Practice in melting and pouring iron and nonferrous alloys. Each squad of students is required to have entire charge of the melting and casting of a heat of iron at least once during the course. Required of mechanical-, electrical- and chemical-engineering students. Rocklund.

2.—PATTERN MAKING. One hour credit. Both semesters, three hours per week. The principles of pattern making are studied in a practical way by having each student make patterns that are actually used in the foundry. Required of students in mechanical, electrical, and chemical engineering. Hartley.

3.—FORGING. One hour credit. Both semesters, three hours per week. Complete course, including stock calculations, bending, drawing, welding, tempering, and hardening. Required of all excepting architectural students. Forney.

* Absent on leave, 1917-'18.

5.—BENCH WORK. One hour credit. First semester, three hours per week. A machine-shop course in the use and care of tools, practice in filing, chipping, drilling, and riveting. Required of students in mechanical, electrical, and chemical engineering. White.

6.—MACHINE TOOL WORK I. One hour credit. Second semester, three hours per week. Principally lathe work. Includes cutting off stock, centering, straight and taper turning and thread cutting; turning steel, wrought iron, cast iron and brass. Required of students in mechanical, electrical, chemical, and mining engineering. White.

7.—MACHINE TOOL WORK II. One hour credit. Second semester, three hours per week. Use of planer, shaper, milling machine, boring mill, turret lathe; laying out and making machine parts from the drawing; gear cutting. Required of students in mechanical engineering. White.

8.—ADVANCED MACHINE SHOP PRACTICE. One hour credit. First semester, three hours per week. Tool making. Hardening and tempering; grinding; autogenous welding; jig making; preparing and using high-speed and alloy steels; assembling machinery. Required of students in mechanical engineering. White.

MATHEMATICS.

Professor: ASHTON.

Assistant Professors: JORDAN, WHEELER, LEFSCHETZ.

1.—SOLID GEOMETRY. Two hours credit. Second semester, two hours, 10, 11. The usual theorems and constructions of standard textbooks and applications to the mensuration of surfaces and solids. Wheeler.

2a.—ALGEBRA. Three hours credit. First semester, three hours, 8, 9, 10, 2, 3; second semester, three hours, 8. Review of elementary algebra; graphic representation, logarithms, determinants. Required of all Freshmen in the School of Engineering.

Jordan, Wheeler, Lefschetz.

2c.—COLLEGE ALGEBRA. Five hours credit. First semester at 8. This section is intended for those who enter with only one unit of algebra and will include a more thorough review of elementary algebra, together with the subjects named in 2a.

3.—PLANE TRIGONOMETRY. Two hours credit. First semester, two hours, 8, 9, 10, 2, 3; second semester, two hours, 8. The six trigonometric functions, principal formulas of plane trigonometry, solution of triangles and practical problems. Required of all Freshmen in the School of Engineering.

Jordan, Wheeler, Lefschetz.

4E.—ANALYTIC GEOMETRY. Five hours credit. First semester, five hours, at 10; second semester, five hours, 8, 9, 10, 11, 1. The straight line and circle, conic sections, higher plane curves, solid analytic geometry. Required of all Freshmen in the School of Engineering.

Jordan, Wheeler, Lefschetz.

5E.—CALCULUS I. Five hours credit. First semester, five hours, 9, 10; second semester, five hours at 9. Differential calculus, applications to geometry and mechanics, maxima and minima, integral calculus, simple applications to length, areas, and volumes. Required of all Sophomores in the School of Engineering. Ashton, Jordan, Wheeler, Lefschetz.

6E.—CALCULUS II. Three hours credit. First semester, three hours, at 11; second semester, three hours, 9, 10. Applications of the calculus to problems of solid geometry, double and triple integration, applications to areas, volumes, centers of gravity, and moments of inertia; simple differential equations. Required of all Sophomores in the civil, electrical, and mechanical courses.

Ashton, Jordan, Lefschetz.

57E.—SELECTED TOPICS IN ENGINEERING MATHEMATICS. Second semester, three hours, at 11. Complex numbers and vectors, exponential and trigonometric series, hyperbolic functions, differential equations of electrical and mechanical engineering, empirical curves, methods of approximation and numeral calculation. The course may be modified to suit the needs of the class. Optional for Juniors, Seniors, and graduates. Jordan.

For other courses in mathematics, see The College.

MECHANICAL ENGINEERING.

Professor: SIBLEY.

Associate Professor: SLUSS.

Assistant Professor: GARVER.

Instructor: HARTLEY.

1.—MACHINE DESIGN I. Three hours credit. Sophomore, first semester, M. and Tu., at 9; and M., three hours, at 1. Materials used in machine construction, with a study of assembly and detail working drawings. Garver.

2.—MECHANISM. Three hours credit. Junior, first semester, Tu. Th., at 9, and F., 1 to 4. A study of the motion of machine parts and of methods of transmission of motion by gears, belts, cams, and links. Recitations and drawing for mechanical-engineering students. Text, Sibley's Pure Mechanism. Garver.

3.—ELEMENTARY MACHINE DESIGN. Three hours credit. Sophomore, second semester, M. W., at 9; Tu., 1 to 4. Design of representative machine parts and study of their relative motions. For electrical-engineering students. Garver.

4.—STEAM MACHINERY. Two hours credit. Sophomore, first and second semester, two hours, Tu. Th., at 10. (a) Fuels, combustion, and steam generation. (b) A study of boiler and engine types. Principal text, Heat Engines, by Allen and Bursley. Required of electrical-engineering students. Sluss.

5.—ENGINES AND BOILERS. Three hours credit. Sophomore, second semester, M. W. F., at 9; and five exercises in the steam laboratory, Sat., 8 to 12. A brief study of the general problem of steam power generation from the standpoint of the installing engineer. Text, Heat Engines, by Allen and Bursley. Required of civil-engineering students. Physics 1E is a prerequisite. Garver.

6.—STEAM ENGINEERING. Four hours credit. Sophomore, first semester, M. W. F., at 8, and W. Th., 1 to 4. Elements of steam machinery, with special reference to combustion of fuels, boiler types, engine mechanism and power-plant auxiliaries. Laboratory practice in proximate analysis of coal, and flue gas analysis. For mechanical-engineering students. Sluss.

50.—MACHINE DESIGN II. Four hours credit. Junior, second semester, M. W. F., at 10, and M. 1 to 4. Solution of problems in the design of general machine parts, including cylinders, plates, springs, riveted joints, bearings, journal shafts, gears, pulleys, and belts. Lectures, recitations, and drawing. Garver.

51.—THERMODYNAMICS. Three hours credit. Junior first semester, M. W. F., at 8. The relation between heat and mechanical energy; theory of heat engines. Must be preceded by Physics 1E and calculus. Required of mechanical-engineering students. Walker and Sluss.

52.—HEAT-ENGINE THEORY. Three hours credit. Junior, first semester, M. W. F., at 9. A course for electrical-engineering students, treating the science of thermodynamics more briefly than in the preceding course and including engine applications. Garver.

53.—MECHANICS OF HEAT ENGINES. Two hours credit. Junior, second semester, two hours Tu. Th., 9. Valve gears and governors of steam and internal combustion engines and turbines. Centrifugal inertia and shaking forces of the moving parts. Required of electrical-engineering students. Course 52 is a prerequisite. Sibley.

54.—HEATING, VENTILATING, AND REFRIGERATING. Two hours credit. Junior, second semester, two hours at 8. Laws of heat transfer, amount of air required for ventilation, methods and apparatus employed in modern buildings, central heating plants. Sibley.

56.—HEAT ENGINE DESIGN. Four hours credit. First semester. Three hours recitation and three hours drawing per week. Includes a brief review of the thermodynamics of engines and turbines. Determination of sizes for given horsepower; methods of compounding, regulation and balancing; study of details, including valves and valve gears, cylinders, rotating and reciprocating parts of engines, and nozzles, blades, and rotors of turbines. Required of mechanical-engineering students. Sibley.

57.—STEAM-ENGINE AND TURBINE DESIGN. Three hours credit. Second semester. Application of principles covered in course I to the design of special types of turbines. Optional for mechanical-engineering students. Sibley.

58.—GAS-ENGINE AND COMPRESSOR DESIGN. Two hours credit. Senior, first semester, M. Tu., 1, W. Th., of alternate weeks, 1 to 4. General theory and practice of gas-engine and compressor design and construction. Sibley.

60.—SHOP METHODS AND EQUIPMENT. One and one-half hours credit. Second semester. One hour recitation and three hours laboratory per week. A study of the design, construction and operation of the modern machine shop. Small tools and equipment; machine tools and shop layouts, safety devices; the routing and tracing of work; theory of time studies and instruction-card writing; cost accounting. Sibley, Hartley.

61.—STRUCTURAL DESIGN. Two hours credit. Senior, optional, first semester. Stresses in steel and reinforced concrete buildings, and design of members of the structure; design of chimneys, bins, and retaining walls. Sibley.

62.—INDUSTRIAL-PLANT DESIGN. Three hours credit. Second semester. Planning of manufacturing plant; location, transportation; routing of work; handling material. Senior optional. Sibley.

64.—MECHANICAL LABORATORY. One hour credit. Second semester, Junior, W. or Th., 1 to 4. Calibration of thermometers and indicator springs, physical properties of lubricating oils, valve setting, commercial testing of boilers, engines, and pumps. For mechanical-engineering students. Sluss and Garver.

65.—POWER LABORATORY. One and one-half hours credit. Senior, first semester, M. or Tu., 1 to 4. Calibration of apparatus, fuel testing, laboratory tests of steam and gas prime movers, complete power-plant test. Outside preparation of preliminary and final reports. Prerequisites, mechanical-engineering 4, 52, and 53. For electrical-engineering students. Sluss.

66.—HEAT-ENGINE LABORATORY. One and one-half hours credit. Senior, second semester, M. or Tu., 1 to 4. Study of experimental engineering methods and their application to complete tests of boilers, steam and gas prime movers, compressors, and refrigerating units. Drill in report writing, and outside reading of literature bearing on power development. Prerequisites, mechanical-engineering 6, 51, and 56. For mechanical-engineering students. Sluss.

67.—THESIS. Three hours credit. Senior, both semesters. F., 1:30 to 4:30. Sibley, Sluss.

68.—SUMMER VACATION WORK. Two months to be spent in regular work in some shop or manufacturing plant of good standing. A report on this work, with a certified statement from the shop foreman or the superintendent, must be presented before credit can be given.

M. E. 70.—AERONAUTICS I. Theory of flight. Types of aëroplanes and details of construction. Two hours, Tu. Th., at 8. Offered for credit to College students only. Lefschetz.

M. E. 71.—AERONAUTICS II. Elementary mechanics as applied to automotive engines. Study of types and details of engines and their construction and operation. Three hours, M. W. F., at 8. Offered for credit to College students only. Sluss.

MECHANICS.

Professors: RICE (H. A.), WILLIAMS.

Assistant Professors: BROWN, ROBERTS, JONES (J. O.).

50.—MECHANICS. Five hours credit. Junior, first semester, five hours, at 9, 10, 11; second semester, 10. A study of the laws of statics and dynamics. Action of forces upon bodies, and the resulting motions. Required of all engineering students. Prerequisite, calculus I.

Brown, Roberts.

51.—STRENGTH OF MATERIALS. Four hours credit. Junior, first semester, four hours, 8; second semester, 8, 9, 10. The theory of resistance to stress and application to engineering construction. Required of all engineering students. Prerequisite, mechanics 50.

Brown, Roberts, J. O. Jones.

52.—TESTING OF MATERIALS. One hour credit. Junior, second semester, four hours, M. W. Th. or F., afternoon, or Sat. morning. A laboratory course to accompany course 51. The testing of iron, steel, wood, and other materials of construction for resistance to tension, compression, torsion, bending, and shearing. Experimental determination of the limits of safe loading. The testing of paving brick. Brown, Roberts.

53.—GRAPHIC STATICS. Two hours credit. Junior, second semester, nine hours, 1 to 4. The properties of equilibrium polygons and other methods of representing the actions of forces, with application to the determination of stresses in beams, trusses, and arches. Lectures and drawing. Prerequisite, mechanics 50. Brown.

54.—ENGINEERING MATERIALS. Two or five hours credit. First semester, ——— hours, by appointment. A study of the methods of manufacture of structural materials and the different means and machines used in their testing. Opportunity will be given for specialization along some particular line, if desired, and considerable experimental work may be done in the laboratory. Recitations, lectures, library, and laboratory work. Optional for Seniors. Prerequisite, mechanics 51. H. A. Rice.

55.—HYDRAULICS. Three hours credit. First semester, 9; second semester, three hours, 9 to 10. A study of the laws governing the pressure and flow of liquids. Calculation of the flow through pipes and over weirs. The principles and types of pumping and hydraulic power machinery. Required of Junior civil and Senior mechanical-engineering students. Prerequisite, mechanics 50. J. O. Jones.

56.—HYDRAULIC LABORATORY. One hour credit. First and second semesters, two hours, M. W. or F., 3 to 5. A course to accompany course 55. Experimental work with the flow of water over weirs and through orifices and pipes, and in testing hydraulic machinery. Required of Junior civil and Senior mechanical-engineering students. J. O. Jones.

57.—HYDRAULIC CEMENT. One hour credit. Second semester, two hours, M. or Th., 3 to 5. A laboratory course in testing hydraulic

cements and making comparison of their qualities. Reading, experimental work, and reports of tests made. For Senior civil-engineering students. Prerequisite, civil engineering 64. Williams.

58.—HYDRAULIC POWER. Three hours credit. First semester, by appointment. Water-power development. Rainfall and runoff, stream flow, preliminary plant layout, selection of standard water turbines, turbine design. Senior optional. J. O. Jones.

METALLURGY.

Professor: WHITAKER.
Instructor: ESTES.

53.—ASSAYING AND METALLURGICAL ANALYSIS. Three or five hours credit. Second semester, five or ten hours, Tu. Th., 1 to 3. The first half of the semester is devoted to the fire assay of gold, silver, and other metals; the second half to the volumetric assay of ores and furnace products. Junior mining-engineering students are required to take the entire course, carrying five credits; the Senior chemical-engineering students are required to take fire assaying the first half of the semester, and will receive three credits. Whitaker, Estes.

90.—METALLURGY I. Three hours credit. First semester, three hours, at 11. General metallurgy and the metallurgy of iron and steel. Lectures and recitations. Must be preceded by chemistry 3. Required of Junior mechanical-engineering students and Senior chemical-engineering students. Whitaker.

91.—METALLURGY II. Three hours credit. Second semester, three hours, M. W. F., at 9. Metallurgy of lead, zinc, and copper, followed by that of silver, gold, mercury, and tin. Required of Senior mining and chemical-engineering students. Prerequisite, chemistry 3. Whitaker.

92.—METALLURGICAL LABORATORY. Either semester, two hours. By appointment. Pyrometric and calorimetric measurements, preparation of silicates and alloys, oxidization and reduction reactions, amalgamation, chlorination, cyaniding and leaching, etc. Optional for Juniors, Seniors, and graduate students who have taken or are taking course 90 or course 91. Estes.

93.—GENERAL METALLURGY. Two hours credit. First semester, Tu. Th., 11:30. Physical properties of metals and alloys, thermal analysis, the measurement of high temperatures, refractories, slags, matte bullion, typical metallurgical operations. Required of chemical engineers. Whitaker, Estes.

95.—METALLOGRAPHY. Two hours credit. Second semester, by appointment. Laboratory and conferences. Prerequisite, metallurgy 90 or 93.

MINING ENGINEERING.

Professors: TERRILL, HUMBLE.
Associate Professor: WOLFE.
Assistant Professor: GRIDER.

50.—MINE SURVEYING. One hour credit. Second semester, three hours per week, Tu., 9 to 12. Instruments and methods used for underground traverse and connection surveys; shaft plumbing and special problems. Field work includes survey of tunnels under campus and actual mine surveys. Prerequisite, civil engineering 1 and 2. Terrill.

52.—MINING LAW. One hour credit. Second semester, alternate years. Outline of the laws relating to the mining industries. Recitations and lectures. Humble.

53.—ORE DRESSING I. Two hours credit. First semester, one lecture, Tu., at 9, and three hours of laboratory work, Th., 1 to 4. Preliminary breaking, roll crushing, jigging, coarse screening, coal washing. Required of students in coal and metal mining. A modified course covering textbook principles, open to Juniors and Seniors in the College and in the School of Engineering, is offered as a three-hour credit option. Lectures and recitations. Grider.

54.—METAL MINING. Two hours credit. First semester, Tu. Th., at 8. Methods of prospecting and mining all kinds of mineral deposits; study of special methods, and costs of working large ore deposits; ventilation; control and measurements of air currents; surface and underground haulage; compressed-air application. Prerequisite, mining engineering 1 or 68. Terrill.

55.—MINING HYDRAULICS. Two hours credit. Either semester, T. Th., at 9. Theory of hydraulics, flow through orifices, tubes, and pipes; flow in conduits and rivers; measurement of water; hydraulic motors, pumps and hydraulic machinery; gravel deposits, drift mining, ground sluicing, hydraulic mining, river mining, dredging, and drainage. Grider.

56.—MINE PLANT AND MILL DESIGN I. Two hours credit. First semester. One lecture, Th., at 9, and three hours drafting, M., 1 to 4. Graphical statics, beams and trusses, building materials, foundations; calculations relating to machine parts, transmission of power by bands, riveted joints, etc.; elementary design of mine buildings, trestles, or bins, headframes, etc. Grider.

57.—MINE ADMINISTRATION.. One hour credit. Second semester, F., at 8. Business management, mine accounts and cost sheets. Mine accidents, care of sick and injured. Sanitation of camps. Terrill.

58.—ORE DRESSING II. Four hours credit. Second semester. Two lectures, T. Th., at 11, and six hours laboratory, W. F., 1 to 4. Fine crushing and screening machinery, sand and slime concentration, flotation, stamp milling, amalgamation, cyanidation, classification, regrinding, mill sampling, miscellaneous processes of separation, and accessory apparatus. Required of students in metal mining. Grider.

59.—MINE EXAMINATION AND REPORTS. Two hours credit. Second semester, T. Th., at 8. Sampling tools; sampling fissure veins, coal seams, placer deposits, tailings, mill products, gases, liquids, etc.; preparing samples for the assayer; recording assays, assay maps and surveys; underground, milling and metallurgical losses; estimating tonnage; mine examination and camp equipment; writing reports. Grider.

60.—PROFESSIONAL THESIS. Two hours credit. This may be description of a mining or metallurgical plant, or of a mining district, or may be work done in connection with course 63, or 66, or may be founded upon research work done at the University. Terrill, Grider.

61.—COAL MINING I. Two hours credit. First semester, Tu. Th. Methods of working coal beds and handling coal. Properties of mine gases, safety lamps, explosives, ventilation, causes and prevention of explosions. Terrill.

62.—COAL MINING II. Three hours credit. Second semester, M. W. F., at 9. Systems and methods of working coal, extraction, haulage, hoisting, coal-cutting tools, coal cutting machinery, excavating machinery, mine cars and tracks, etc.; surface plants. Prerequisite, mining engineering 1 and 61. Terrill.

63.—MINE PLANT AND MILL DESIGN II. Three hours credit. Second semester, 1 lecture, W. at 10, and 6 hours drafting, M. F., 1 to 4. For Senior and graduate students. Advanced course in design, construction and installation of mine plants, concentrating mills, machinery, headframes, ore bins, dams, fans, foundations, tramways, flumes, sluices and

pressure boxes. Preparation of working drawings, bills of materials, specifications and estimates. Prerequisite, mining engineering 56.

Grider.

64.—MINING ENGINEERING. Three hours credit. First semester, M. W. F., at 9. The economic importance of geological irregularities affecting mine operations; mine maps; choosing methods and locating openings; theory of ventilation and compressed air; water supply; transportation; electricity as applied to mining; power problems; costs and conditions affecting costs. Prerequisites, mining engineering 54, and physics 1E and 2E.

Grider.

65.—SUMMER WORK. Each candidate for a degree is required to give evidence of having had experience in some phase of mining work. This may be gained by an investigation of some mining district under the direction of an instructor for a period of six weeks, or by employment in mining work.

66.—ADVANCED ORE DRESSING III. Four hours credit. Both semesters, Senior or graduate students. Two lectures, T. Th., at 10, and 6 hours laboratory work, T. Th., 1 to 4. Principles and schemes of mill processes. Adapting processes to specific ores, each student to choose one of the following for special study: flotation or other concentration method; amalgamation; cyanidation; chlorination; chloridizing roast; or lixivation methods.

Grider.

67.—MINERAL LAND SURVEY. Two hours credit. First semester, Senior and graduate students. One lecture and one afternoon. (a) Mineral land surveying; mining claims, timber, coal and stone lands; dam, mill, tunnel, and reservoir sites; ditch, flume, and pipe lines; preparation and filing legal documents; duties of United States deputy mineral surveyors. (b) Subdividing public lands, locating, relocating, and marking corners, making plats, reports, etc. Prerequisite, civil engineering 1 and 2.

Grider.

1 or 68.—ELEMENTS OF MINING. Three hours credit. Second semester, M. W. F., at 11. Prospecting, boring, drilling, explosives (composition, manufacture and uses), rock breaking (shaft sinking, tunneling, etc.), open pit mining, development, underground methods and support of mine workings. Required of students in mining. Open to Juniors and Seniors in the College and School of Engineering.

Terrill.

69.—MINING GEOLOGY. Two hours credit. First semester, T. Th., by appointment. Lithology: structure, texture, mineral and chemical composition, and the manner of formation and occurrence of igneous, sedimentary, and metamorphic rocks. Effects of faulting, folding and intrusion of igneous rocks. Geological problems confronting mining engineers. This course is adequate for all general field determinations and prospecting.

Grider.

PHYSICAL EDUCATION AND HEALTH.

Professors: HAMILTON, SUNDWALL.

Assistant Professor: BRIGGS.

Instructor: BOND.

Assistant Instructors: COOK, JENSEN.

Every student is required to engage in the physical exercise designated by the proper medical authority of the University as suitable to his personal needs as shown by a physical examination. Required work is arranged on the basis of five hours per week for men and four hours per week for women.

All Freshmen are required to take hygiene lectures one hour each week, first semester, Thursday at 4 o'clock. For outline of work offered, see Section XII.

PHYSICS.

Professor: KESTER.*Associate Professor:* RICE (M. E.).*Assistant Professors:* STIMPSON, SMITH (T. T.).**Instructor:* WHITTEMORE.*

1E.—GENERAL PHYSICS. Five hours credit. First semester, four recitations at 11; two hours laboratory at assigned periods; second semester, four recitations at 10, two hours laboratory at assigned periods. A fundamental course of experimental lectures, recitations, and problems. Prerequisites, plane trigonometry and some knowledge of analytical geometry and calculus. First semester, M. E. Rice and other instructors; second semester, E. F. Stimpson and other instructors.

2E.—GENERAL PHYSICS. Five hours credit. Second semester, four recitations, at 11, two hours laboratory at assigned periods; first semester, four recitations, at 10, two hours laboratory at assigned periods. A continuation of course 1E. Second semester, M. E. Rice and other instructors; first semester, E. F. Stimpson and other instructors.

52.—THEORY OF ELECTRICITY AND MAGNETISM. Three hours credit. First semester, M. W. F., at 8. M. E. Rice.

56E-I.—ELECTRICAL MEASUREMENTS I. One and one-half hours credit. First semester, three hours per week. M. Tu. of alternate weeks, 1 to 4. A laboratory course coördinate with 52. M. E. Rice.

56E-II.—ELECTRICAL MEASUREMENTS II. One and one-half hours credit. Second semester, three hours; M. Tu. of alternate weeks, at 1 to 4. Continuation of course 56E-I. M. E. Rice.

For other courses in physics, see The College and The Graduate School.

ROMANCE LANGUAGES.

Assistant Professor: GAGE.*Instructor:* DA CRUZ.

1.—ELEMENTARY FRENCH I. Five hours credit. First semester, at 11. Grammar (Fraser and Squair), and easy reading. Drill in pronunciation, accidence, and easy syntax. Gage.

2.—ELEMENTARY FRENCH II. Five hours credit. Second semester, at 11. A continuation of course 1. Reading of simple prose texts, with exercises in dictation, elementary composition, and speaking. Gage.

(Instead of taking course 3, engineering students should take course 5. Those wishing course 4 may take it either semester in the College.)

5.—SCIENTIFIC FRENCH. Three hours credit. First semester, by appointment. Translation of some scientific text. Reading and reports of current French scientific and technical periodicals. The aim of this course is to give the students a reading knowledge of the French language of science for practical use in research work. Prerequisites, courses 1 and 2. Gage.

For advanced courses in French, see The College.

SPANISH.

21.—ELEMENTARY SPANISH I. Five hours credit. First semester, five hours, 9, 10, or 1; also second semester, five hours, at 2. An outline of grammar (Fuentes and François). Reading of short stories. Elementary composition. da Cruz.

22.—ELEMENTARY SPANISH II. Five hours credit. Second semester, five hours, 9 or 10. A continuation of course 21. Grammar and composition. Reading of easy modern prose, elementary composition and speaking. da Cruz.

For advanced courses in Spanish, see The College.

* Absent on leave.

TECHNICAL REPORTS AND THESES.

Special written reports are required from each student at certain times during his course of study, generally one in each semester of the Sophomore year, one in the Junior year, and one in the Senior year. A student enrolled for technical report I, II, III, or IV confers with his instructor for assignment of the subject on or before October 15 for the first semester, and on or before March 15 for the second semester. The finished reports must be in the instructors' hands by January 15 and May 15 of the respective semesters. Each report counts for one-half credit.

A special thesis is required of each student before his graduation. (See "Thesis" in the description of courses of the professional departments.)

Standard forms for the make-up of technical reports, theses, and other written papers are specified in an official circular to be had at the Dean's office.

SUMMER WORK.

In several of the courses of study practical work in one or two summers is required. This work is not measured in terms of credit hours, although in fixing the requirements for graduation one or two additional credit hours are required in those courses of study which do not include summer work.

INSPECTION TRIPS.

As a valuable adjunct to resident study at the University, inspection trips to various engineering works are required to be taken by students with their instructors. Such trips may be made to large machine shops, power plants, steam or electric railways, lighting systems, city water-works, sewerage systems, industrial chemical plants, cement works, mining plants, or smelters. Architectural-engineering students are expected to visit important buildings in course of construction. These trips may be made during regular sessions of the school or during vacation. Parties sometimes travel as far as Chicago or St. Louis. The trips requiring absence from other work and those of considerable expense are indicated in the programs of required courses of study.

ENGINEERING EXPERIMENT STATION.

STATION STAFF.

FRANK STRONG, Ph. D., President.
P. F. WALKER, M. M. E. (Director), Mechanical Engineering.
GEORGE C. SHAAD, E. E., Electrical Engineering.
HERBERT A. RICE, C. E., Mechanics and Civil Engineering.
GOLDWIN GOLDSMITH, Ph. B., Architectural Engineering.
A. C. TERRILL, E. M., Mining Engineering.
W. A. WHITAKER, A. M., Chemical Engineering.

PURPOSES.

This department of University activity has been established for two reasons: first, to correlate and group together in a more systematic way the results of scientific investigation than heretofore has been done under the various departments; second, to foster, enlarge, and direct this work, especially along lines of value to this state, and to supervise the publication and distribution of the results of engineering and industrial research work.

The work completed and published up to the present time has been done mainly by members of the teaching staff. It is described in detail in Section XII of the complete Catalog. Lists of all publications and of those soon to be issued are given. All communications relative to the Station and its work should be addressed to the Director.

SECTION V.

School of Fine Arts.

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FACULTY.

FRANK STRONG, Ph. D., Chancellor of the University, and President of the Faculties.

HAROLD L. BUTLER, A. B., Dean of the School of Fine Arts, and Professor of Voice.

CHARLES G. DUNLAP, Litt. D., Professor of English Literature.

CARL A. PREYER, Mus. D., Associate Dean of the School of Fine Arts, and Professor of Piano and Composition.

EDWIN M. HOPKINS, Ph. D., Professor of Rhetoric and English Language.

WILLIAM A. GRIFFITH, Professor of Drawing and Painting.

EUGENIE GALLOO, A. M., Professor of Romance Languages and Literatures.

CHARLES S. SKILTON, A. B., Professor of Organ, History of Music, and Theory.

JAMES NAISMITH, M. D., Professor of Physical Education.

FREDERICK E. KESTER, Ph. D., Professor of Physics.

ELMER F. ENGLE, A. M., Professor of German.

WILLIAM B. DOWNING, Professor of Voice.

RAPHAEL D. O'LEARY, A. B., Professor of English.

ARTHUR NEVIN,* Professor of Choral Music, Ensemble, and Music Extension.

WILLIAM M. HEKKING, B. P., Professor of Drawing and Painting.

FRANK E. KENDRIE, A. M., Professor of Violin and Orchestral Playing.

SELDEN L. WHITCOMB, A. M., Associate Professor of English Literature.

LOUIS E. SISSON, A. M., Associate Professor of Rhetoric.

WILLIAM S. JOHNSON, Ph. D., Associate Professor of English Literature.

ELISE NEUEN SCHWANDER, Ph. D., Associate Professor of French.

JOSEPH A. FARRELL, Associate Professor of Voice.

HARRIET GREISSINGER, Mus. B., Assistant Professor of Piano.

GORDEN L. CRAM, A. M., Assistant Professor of Piano.

ANNA SWEENEY, Mus. B., Assistant Professor of Piano.

JOHN R. FRAZIER, Assistant Professor of Drawing and Painting.

MARIA L. BENSON, A. B., Instructor in Design.

J. C. MCCANLES, Instructor in Band Instruments.

PAUL MILLER, Mus. B., Instructor in Piano.

PEARL EMLEY-ELLIOTT, Mus. M., Instructor in Piano and Organ.

CORA I. REYNOLDS, Mus. B., Instructor in Voice.

EVELYN F. OLCOTT, Instructor in Voice.

WILLIAM B. DALTON, Instructor in Cello.

* Leave of absence for duration of the war.

SCHOOL OF FINE ARTS.

DEPARTMENTS.

The School of Fine Arts is made up of the following departments:
(1) Music; (2) Drawing and Painting.

EQUIPMENT.

IN MUSIC. The department of music of the University occupies temporarily a large frame building at 1406 Tennessee Street. It hopes to be able to move into its quarters in the new Administration Building, now being erected, before January 1, 1919. The department has ten concert grand and six upright pianos; a three-manual pipe organ; a piano with organ pedals; charts for sight-reading, and a Victrola with several hundred music records.

IN DRAWING AND PAINTING. The department of drawing and painting occupies specially constructed rooms in the east wing of the Administration Building. There are six large, top-lighted studios. The department is well equipped with objects used in teaching drawing and design, together with a large library.

THE LIBRARY. The University Library contains a large collection of works on art, including art exposition and criticism; full sets of the classic and modern dramatic works, with many books on dramatic art and criticism; a large collection of vocal and orchestral scores of operas, oratorios and cantatas, biography, music history and criticism, symphonies and overtures, chamber music, ensemble music, pianoforte and organ music. These collections are annually increased. In addition each department has its departmental library.

THE FACULTY.

The professional faculty of the School of Fine Arts is made up of instructors who have had the advantage of the finest training to be secured in this country, and, in addition, many of them have had extended European training. Each one has had a large experience before the public—in concert, opera, oratorio, in dramatic work—and is able to give practical advice to his students in these matters. No instructor with less than five years' teaching experience is engaged for the faculty, so students may be sure that they are in the hands of thoroughly experienced teachers. Many members of the faculty are authors, composers, and artists of rank and merit, their works having been issued by representative publishing houses. Each instructor is a specialist in his particular work, and represents the best thought and method of modern pedagogy along that line.

CURRICULA.

Curricula Leading to Degrees.

The curricula in the School of Fine Arts leading to degrees are as follows:

Four-year courses in piano, voice, violin, organ, and composition, leading to the degree bachelor of music.

A four-year course in drawing and painting, leading to the degree bachelor of painting.

All candidates for a degree must spend at least two years in residence at the University.

Curricula Leading to an Artist's Certificate.

There are also four-year curricula in voice, piano, organ, violin, and drawing and painting, leading to an artist's certificate in these subjects.

These curricula are designed to accommodate those students who are unable to meet the scholastic requirements of the regular courses in piano, voice, violin, organ, or drawing and painting; or those who do not wish to carry the studies in the College which are required of students in the courses leading to a degree; or those who wish to specialize with the idea of fitting themselves as teachers of the various subjects.

For entrance to these courses twelve units of academic high-school work are required, and also the same musical requirements as for the degree courses.

The studies demanded for the completion of these courses are the same as for the completion of the degree courses, omitting the studies in the College.

Curricula Leading to a Teacher's Certificate.

Three-year curricula in voice, piano, organ, violin, and drawing and painting lead to a teacher's certificate in these subjects.

The three-year curricula are the same as the first three years of the artist's certificate curricula, with the same entrance requirements. Candidates for the three-year teacher's certificate in piano or violin must present credits in one year of Teaching Materials in piano or violin, with one year of practice teaching.

Public School Music—Public School Drawing.

Two-year curricula in public-school music and in public-school drawing lead to certificates in these subjects.

The two-year curricula are designed to prepare students as teachers of music or of drawing and painting in the grades and high schools of the state. The requirements for entrance are the same as for the College: viz., fifteen units of high-school work.

Upon the completion of these courses the State Board of Education will issue a special state certificate entitling the holder thereof to teach music or drawing and painting in any of the grade or high schools of the state.

ADMISSION.

There are two methods of admission to the School of Fine Arts: First, by examination; second, by certificate.

1. By Examination.

Students who cannot present certificates from accredited high schools will be examined in the subjects required for entrance. The times and place of examination are set forth in the General Information section.

2. By Certificate.

Students will be admitted without examination on certificates from accredited high schools, or other recognized preparatory schools, signed by the proper school officer.

Academic Requirements for Admission.

For admission to the courses leading to the degrees bachelor of music or bachelor of painting, the requirements are the same as for admission to the College: viz., graduation from an accredited high school, or the completion of fifteen units of high-school work.

Admission Requirements for Music.

IN PIANO AND ORGAN. Students desirous of taking piano or organ as a major must have completed the following preparatory piano course, intended to parallel the four years of high-school study, before admission to the Freshman class.

Students who have nearly completed the course will be admitted with condition on recommendation of the head of the department. An examination in fourth-year work is required. While the School of Fine Arts prefers this course of study, students who have been prepared with Lambert's or Mathews' Graded Studies, Mason's Touch and Technic, or other recognized methods, may offer them as a substitute.

For the benefit of schools and teachers who may prepare students for entrance to the School of Fine Arts, this preparatory course is given in detail. It is not intended that all the material in this course should be covered by any one student. A small amount of material from each year, well done, is more acceptable than a large amount poorly done.

The pieces given merely indicate the style and difficulty of the compositions to be studied. They are intended to serve as a guide to the teacher in the selection of material.

All or any part of this course may be studied in the School of Fine Arts, should the student be unable to secure adequate preparation elsewhere.

PREPARATORY PIANO COURSE.**FIRST YEAR.****TECHNIC.**

Correct position at the piano.

Five finger exercises for developing strength and independence.

Two principal touches—legato and staccato.

METHODS.

One of the following:

Lambert Pianoforte Method.

Streland Elementary Material.

Lebert and Stark, Book 1.

Piano Methods of Kohler and Czerny.

Russell, First Steps in Interpretation.

(These methods to be used only long enough to prepare for the following material.)

TECHNIC.

Mentor Crosse—Daily Exercises, Vol. 1 (John Church & Co.).

Preparatory Scale Exercises.

STUDIES.

Select material from the following:

Kohler—Op. 157 (for technical development).

Duvernoy—Op. 17 (for technical development).

Crosby-Adams—four Wrist Studies.

Burgmuller—Op. 100 (for phrasing, expression and rhythm).

Concone—Op. 24 (for phrasing, expression and rhythm).

Loeschhorn—Op. 65, Books 1 and 2.

PIECES.

By Ellsworth, Watson, Dutton, Crosby-Adams, Aldrich, Vincent Gaynor, etc.

OBJECTS OF STUDY IN THE FIRST YEAR.

1. A correct position at the piano.

2. Proper position at the wrist, hand and arm.
3. Relaxation of hand and arm.
4. 2-3-4-5 finger exercises, with well-curved, firm fingers.
5. Legato and staccato touches.
6. An understanding of the common musical terms.
7. Proper method of phrasing.
8. Methods of practice.
9. Development of sense of rhythm.
10. Memorizing.

SECOND YEAR—FIRST SEMESTER.

TECHNIC.

Mentor Crosse, Vol. 2 (continued).

STUDIES.

Selected from the following:

- Loeschhorn—Op. 65, Book 3 (for technical development).
 Preyer—Ten Wrist Studies (for technical development).
 Heller—Op. 47 (for phrasing, expression and rhythm).
 Stamaty—Op. 37 (for phrasing, expression and rhythm).

PIECES.

- Reinecke—Children's Songs, arr. Carrie Alchin.
 Von Wilm—Twelve Short Pieces.
 Gade—Op. 36, The Children's Christmas Eve.
 Friml—Op. 72, No. 3, Minuetto.
 MacDougall—Studies in Melody Playing.
 Preyer—Op. 38, Six Easy Pieces.

SECOND YEAR—SECOND SEMESTER.

TECHNIC.

Mentor Crosse, Vol. 2 (continued).

STUDIES.

Selected from the following:

- Lemoine—Op. 37 (for technical development).
 Loeschhorn—Op. 66, Book 2 (for technical development).
 Mayor—Pedal Studies at the Piano (for technical development).
 Bertini—Op. 29 (for phrasing, expression and rhythm).
 Bach for Beginners, Vincent (for phrasing, expression and rhythm).

PIECES.

- Friml—Op. 79, No. 5, Contentment.
 Heller—A Curious Story.
 Kullak—Op. 62, Scenes from Childhood.
 Rogers—At the Spinning Wheel.
 Dennee—Tarantella.
 Rheinhold—Suite Mignonne.
 Hannah Smith—Five Plantation Dances (for rhythm).
 Emery—Brown Eyes.
 German—Henry VIII Dances (duet).

OBJECTS OF STUDY IN THE SECOND YEAR.

1. Simple major and minor scales.
2. Easy wrist work in Thirds and Sixths.
3. Development of melody touch.
4. Simple studies in broken chords.
5. Portamento touch.
6. First pedal studies.

THIRD YEAR—FIRST SEMESTER.

TECHNIC.

Mentor Crosse, Vol. 3.

STUDIES.

Selected from the following:

- Loeschhorn—Op. 66, Book 2.

Heller—Op. 46.
 Preyer—Op. 44.
 Bach—Easy Preludes.
 Sonatinas by Clementi, Kuhlau, Dussek, etc. (Edition Steingraber, No. 19).

PIECES.

Grieg—Albumblatt, E. Minor.
 Lack—Idilio, Op. 134.
 Durand—Chaconne, Op. 62.
 Merkel—Spring Song, Op. 18, No. 1.
 Saar—Berceuse Mignonne.
 Moszkowski—Scherzino, Op. 18, No. 2.
 Raff—Fabliau, Op. 75, No. 2.

THIRD YEAR—SECOND SEMESTER.

TECHNIC.

Mentor Crosse, Vol. 3 (continued).

STUDIES.

Selected from the following:

Loeschhorn—Op. 66, Book 3.
 Krause—Op. 15, Ten Studies for the Left Hand.
 Krause—Op. 2, Trill Studies.
 Perry—Wrist Studies.
 Bach—Easy Preludes (continued).
 Sonatinas by Clementi, Kuhlau, Dussek, etc. (continued).
 Grieg—Op. 12, Lyrical Pieces, Schumann Album for the Young.

PIECES.

Lack—Le Chant du Ruisseau, Op. 92.
 Scharwenka, Ph.—Moment Musicale, A Major.
 Mildenberg—Arabian Night.
 Sternberg—Historiette Musicale, Op. 50, No. 2.
 Rimsky—Korsakoff-Novellette, Op. 12, No. 2.
 Bendel—Spinning Song.

OBJECT OF STUDY IN THE THIRD YEAR.

1. Study of chord playing.
2. A, B, C major, minor and chromatic scales.
3. Triad arpeggios and their inversions.
4. Rhythms of 2 against 3.
5. Trill exercises.

FOURTH YEAR—FIRST SEMESTER.

TECHNIC.

Mentor Crosse, Vol. 4.

STUDIES.

Selected from the following:

Heller—Op. 45.
 Czerny—Op. 299, Book 1 and 2.
 August Hoffman—Left-hand Studies (after Bertini).
 Loeschhorn—Op. 67, Book 1.
 Bach—The Easy Two-part Inventions.
 Sonatas:
 Mozart—No. 1, C Major.
 Haydn—No. 5, C Major.
 Beethoven—Op. 49, No. 1 and 2.

PIECES.

Whiting—La Fileuse.
 Chaminade—Air de Ballet, Op. 30, No. 1.
 Godard—Novelloza, Op. 47.
 Godard—Au Matin, Op. 83.
 Rheinberger—Ballade in G Minor.

- Grieg—Papillon, Op. 43, No. 1.
 Jensen—Will o' the Wisp.
 Moszkowski—Polonaise, Op. 18, No. 5.
 Schuett—Etude Mignonne, Op. 16.

FOURTH YEAR—SECOND SEMESTER.

TECHNIC.

The Little Pischna.

STUDIES.

- Czerny—Op. 299, Book 3 and 4.
 Bach—Two-part Inventions (continued).

SONATAS.

- Mozart—No. 4, in F.
 Hollander, Alex.—Intermezzi for the Left Hand, Op. 31.
 Haydn—No. 7, in D Major.
 Beethoven—Op. 14, No. 1, and 2.

PIECES.

- Scharwenka—Staccato Etude, Op. 40.
 Grieg—Op. 40, No. 5.
 Preyer—Dialogue Without Words.
 Dubois—Scherzo et Choral.
 Liebling—Serenade, Op. 34.
 Saint-Saens—The Swan (Kunkel edition).
 Debussy—Arabesque, No. 2, in G Major.
 Hoffman—Polonaise, Op. 55, No. 3.

OBJECTS OF STUDY IN THE FOURTH YEAR.

1. Scales in sixths and tenths.
2. Dominant and diminished seventh arpeggios and their inversions.
3. Octave exercises.
4. Study of embellishments.
5. Independence of fingers developed through polyphonic playing.

Entrance Requirements in Voice.

Students desirous of studying voice as a major subject must have completed at least *one year* of the following two-year preparatory vocal course before admission to the Freshman year. As the study of voice cannot properly be carried on without knowledge of the piano, the candidate for admission must have completed at least *one year* of the four-year preparatory piano course outlined on page 243.

PREPARATORY VOCAL COURSE.

FIRST YEAR.

THE OBJECT OF STUDY.

1. A proper position of the head and body.
2. A systematic control of the breath.
3. A proper method of tone attack.
4. A proper method of tone release.
5. Correct tone placement through the medium range of the voice.
6. A correct method of sustained and legato singing.
7. Development of an even scale.
8. A proper use of the pure vowels.
9. Correct pronunciation and distinct enunciation in singing English.
10. Simple songs in English.

MATERIAL USED MAY BE SELECTED FROM—

- Sieber—36 Measure Vocalises, for all Voices.
 Clippinger—Systematic Voice Training.
 Behnke and Pearce—Voice Training.
 Marzo—Art of Vocalization—Preparatory Course.
 Shakespeare—Vocal Method.
 Simple Songs in English.

SECOND YEAR.

OBJECTS OF STUDY.

1. A continuation of work in the first year, with special emphasis on proper breath control.
2. Primary work in agility.
3. Voice extension.
4. Staccato and semistaccato.
5. Long and short vowels.
6. Short scales and arpeggios.
7. Simple songs in English.

MATERIAL TO BE USED MAY BE SELECTED FROM THE LIST ABOVE, AND FROM—
Concone—Op. 50.

Bordogni—Exercises for Agility.

Marzo—Art of Vocalization, Book 1.

Spicker—Masterpieces of Vocalization, Book 1.

Songs, by Schubert and other standard composers, in English.

Entrance Requirements in Violin.

Students desirous of studying the violin as a major must have completed the following preparatory course, intended to parallel the four years of high-school study, before admission to the Freshman year. For the benefit of schools or teachers who may prepare students for entrance to the School of Fine Arts, this course is given in detail. It is not intended that all the material in the course should be covered by any one student. A small amount of material, from each year, well done, is more acceptable than a large amount poorly done. Students who have nearly completed the course will be admitted with a condition on recommendation of the head of the department.

All or any part of this course may be studied in the School of Fine Arts, should the student be unable to secure adequate preparation elsewhere.

PREPARATORY VIOLIN COURSE.

FIRST YEAR.

OBJECTS OF STUDY.

1. Correct position of holding violin.
2. Correct position of wrist, hand and fingers of left hand.
3. Correct position of arm, hand and fingers of right hand.
4. Exercise for legato, full-bow staccato and half-bow staccato.
5. Understanding common musical terms.
6. Methods of practice.
7. Development of sense of rhythm.
8. Memorizing.

STUDIES.

Laoureux—Book I.

Kelly—Book I.

Sevcik—Violin Technic, Op. 1, Part I.

Dancla—Ecole de Mechanism.

Gordon—Formation Studies for the Violin, Book I.

SOLOS.

Philip Mittell—Graded Course, Vol. I.

Pleyel—Duet, Op. 8.

Twenty-five Pieces in the First Position (Schirmer edition).

The Violinist's Album, Vols. I, II, III (Augener edition).

Kendrie—Four Elementary Studies.

SECOND YEAR.

OBJECTS OF STUDY.

Continuation of the first year :

1. Study of scale construction.
2. Exercises for flexibility of bow, arm and wrist.
3. Development of Martele bowing.
4. Development of left wrist and arm for shifting.

STUDIES.

Laoureux—Books II, III, IV.
 Dancla—Book II.
 Schubert—Book II.
 Sevcik—Op. 8.
 Wohlfahrt—Op. 75, Book II.
 Kayser—Book II.
 Sitt or Schradieck—Scale studies.

SOLOS.

Philip Mittell—Graded Course, Vol. II.
 Sietz—Classical sonatinas of Beethoven and Clementi (B. M. Co. ed.).
 Solos by Dancla, Thome, Bohm, together with transcriptions of the smaller compositions of Mozart, Haydn, Beethoven, Wagner and Humperdinck.

THIRD YEAR.

OBJECTS OF STUDY.

Continuation of the second year :

1. Three-octave scale.
2. Spiccato, slurred staccato bowing.
3. Chords, double-stopping and arpeggios.

STUDIES.

Mazas—Books I and II.
 Kayser—Books II and III.
 Sevcik—Scale Studies and Double-stopping.
 Alard—Scales.
 Dout—Preparatory Studies.

SOLOS.

Solos by Drdla, Wieniawski, de Beriot.
 Concertos by Seitz, Accolay and Viotti.
 Violin Classics, Vols. I to V, Schirmer.

Entrance Examinations.

Owing to the fact that students are generally out of practice during the summer, entrance examinations in the above work can be taken any time up to October 1. Students intending to enter should write the Dean of the School of Fine Arts about September 1, signifying such intention and arranging for interviews with the heads of the various departments.

Special Students.

All persons who desire to pursue a special line of work, without conforming to the requirements for entrance or following a prescribed course, may apply for admission as special students to the Dean of the School of Fine Arts. The Dean's certificate of acceptance must be presented to the Registrar before registration.

Special students desiring credit toward a degree or a certificate are subject to the same regulations as regular students as to the quality of work, attendance at recitals and examinations. *Nonresident special students who are not regularly enrolled in some other school of the University will be expected to carry not less than ten hours' work, of which, in the case of music students, there must be two hours of theory.*

Admission to Advanced Standing.

Credit for work of collegiate or professional standing is granted only on recommendation of the Advance Standing Committee.

For regulations governing the granting of such credit, see "Admission to Advance Standing," Section I, Page 49.

REGISTRATION.

All candidates for admission having certificates from accredited schools, and all students of the University intending to pursue their studies during the ensuing year must present themselves for registration at the University on September 16, 17, 18. *Registration at a later date will be permitted only on the payment of a fee of one dollar.*

ENROLLMENT.

After registration has been completed with the Registrar and after fees have been paid, students should apply to the Dean for enrollment in their classes. Enrollment the first semesters occurs September 17, 18, and on the first day of the second semester. *Enrollment at a later date will be permitted only on the payment of a fee of one dollar.*

SPECIAL COURSES.

Ensemble.

Ensemble classes meet throughout the Sophomore and Junior years of the piano, organ, and violin courses. The first year is given over to four- and eight-hand music for one and two pianos. Standard symphonies and overtures and various modern pieces are studied. The second year is given over to playing with the strings, studying the standard trios, quartets, and quintets. Violin students remain in the second-year class for two years, as there is no repetition of material used. *Two years of ensemble are required of all piano, organ, and violin students who are candidates for a degree or a certificate.*

Teaching Materials—Piano, Violin.

These courses are designed to aid piano and violin students in grasping the principles and methods of teaching these instruments. A thorough review of the materials—exercises, studies, and pieces—used in a thorough and well-graded course for these instruments, together with the best and most modern methods of presenting these materials to pupils of all ages. Actual practice in teaching is gained by teaching beginning and intermediate pupils under the guidance of instructors. *One year of teaching materials is required of all piano or violin students who are candidates for a three-year teacher's certificate in either piano or violin.*

Music History.

The Fine Arts course in Music History occupies one hour for the Sophomore year and two hours for the Junior year. One of the features of the course is the great mass of illustrative material used, by which the student hears the music performed and has ample opportunity of studying it from the tonal standpoint.

Ear Training and Dictation.

This is a course most necessary for the full development of the modern music student. It is required of all freshman students in the regular courses. Advanced students are advised to repeat it until proficient.

GENERAL.

The Thayer Art Museum.

Through the generosity of Mrs. William B. Thayer, of Kansas City, Mo., the University has an art collection that is of unusual value to art students. It was made with this end in view and illustrates the development of design in textiles, ceramics, glassware, and costumes. There are a number of important paintings of the American school, Chinese and Japanese paintings, and 1,200 Japanese prints of exceptional merit. There are about 9,000 items in the collection, the most important being textiles, of which there are examples of Coptic and Byzantium textiles, Venetian embroidery of the fifteenth and sixteenth centuries, Chinese tapestries of the Ming period, Chinese embroideries, Indian and Persian shawls and rugs, a large collection of Paisley shawls and American counterpanes. In Chinese art, the collection is rich in cameo glass, ceramics, and jade articles, over 100 being snuff bottles. In Japanese art objects are many inros, nitsukis, and combs done in carved ivory and lacquer; bronze castings; swords and sword guards; cloisonné, and ceramics.

The following well-known American painters are represented by important examples of their work: George Innes, J. S. Murphy, Winslow Homer, Homer Martin, Paul Dougherty, Emil Carlsen, Richard Miller, Jonas Lie and Robert Henri.

The following European painters are represented: Joseph Israels, Mesdag and Sarolla Bastida.

There came with the Thayer collection about a thousand books upon art topics. The University has recently purchased the F. O. Marvin art library. These collections, added to the 3,500 books on art already in the University library, make it one of the largest and most valuable art libraries in the West. These are all available to the student of art.

Concerts and Recitals.

The University supports a course of eight concerts by artists of the highest rank. All fine arts music students are admitted to these concerts free of charge.

Public recitals and concerts are given frequently in Fraser Hall by members of the Faculty and by advanced students.

Recitals are given weekly by the students of the school, at which works studied in the classroom are performed before a small audience of fellow students and friends. All music students are required to attend these recitals and all concerts, to take part in the programs at least twice a year, and to present each semester a record of attendance. These semipublic appearances are of great assistance in enabling the student to acquire the ease and self-possession so essential to a successful public performance.

Art Exhibitions.

Frequent exhibitions of works of art are held at the University, together with a course of lectures upon subjects related to the fine arts. At the close of the year there is held an exhibition of work done by pupils of the department of drawing and painting.

University Chorus.

The University Chorus, of 100 voices, is supported wholly by the University, although many townspeople are members. Only the finest choral works are studied, and two concerts are given annually. Weekly rehearsals are held in Fraser Hall. During the four years of the degree course thorough knowledge of at least eight great choral works is gained. In addition, many fine miscellaneous choruses are performed.

University Orchestra.

The University supports an orchestra, made up of students and amateur musicians from the city. Weekly rehearsals are held and two concerts are given annually. The orchestra is also used in the performance of concertos for the various solo instruments, and in playing the accompaniments for the choral works sung by the University Chorus.

University Band.

The University Band of 70 pieces is made up wholly of University students. It rehearses weekly and gives two annual concerts.

Glee Clubs.

A Men's Glee Club and a Women's Glee Club conducted by the Director of the vocal department give opportunity for the study and performance of the standard and lighter compositions for men's and women's voices. Each club gives an annual concert, and the Men's Glee Club makes a trip during the holidays.

Scholarships.

GOVERNOR ARTHUR CAPPER has given a scholarship in the sum of \$50. It is open to Freshman students in the School of Fine Arts. Held in 1917-'18 by Charles Kolacny.

MRS. JOHN T. STEWART, of Wellington, has given a scholarship in the sum of \$50. It is open to Sophomore students in the School of Fine Arts. Held in 1917-'18 by Miss Lorna Marie Raub.

Pianos for Practice.

This school does not furnish pianos for practice at the building, except a piano with organ pedals, but instruments can be rented in town for from three to five dollars a month, and grand pianofortes at from seven to ten dollars a month. Pianos rented of private persons, or in connection with board, may often be secured at even lower rates. Several students sometimes unite in renting an instrument, thus materially reducing the expense.

EXPENSES.

By legislative enactment, a matriculation fee of five dollars (to be paid but once) must be charged each student of Kansas entering any of the regular courses of the School of Fine Arts. Nonresidents of Kansas must pay a matriculation fee of ten dollars. Special students do not pay a matriculation fee.

The instructors in the School of Fine Arts receive compensation from the state for only part of the work of the courses, and the remainder must be paid for at rates indicated below.

If the student withdraws before the middle of the quarter, one-half of the tuition fee will be refunded. Should he withdraw after the middle of the quarter, no part of the tuition fee will be refunded. Should the student be withdrawn at any time on account of unsatisfactory work, no part of the tuition fee will be refunded. No lessons are given during the week of the semiannual examinations.

The following rates are for the quarter of nine weeks, and with the exception of the work in public-school music or drawing and painting, are based on two half-hour private lessons a week in the major study, together with class work in harmony, music history, technic, sight singing and ear training, and all studies in the College or the School of Education.

All bills are payable quarterly in advance, and enrollment in classes will be permitted only upon the presentation of the treasurer's receipt for the quarter's tuition.

Rates for Regular Students.

First year . . .	Piano, per quarter, lessons with assistants	\$27.50
	Voice, per quarter, lessons with Miss Reynolds or Mrs. Olcott	27.50
	Voice, per quarter, with other teachers	33.50
	Violin, per quarter	27.50
	Drawing and painting, per quarter	15.00
	Public-school drawing, per quarter	15.00
	Public-school music, per quarter	15.00
	(Private lessons are subject to fees.)	
Second year . .	Rates the same as for the first year.	
Third year . . .	Piano, per quarter:	
	Two a week with Prof. Preyer	\$40.00
	One a week with Prof. Preyer and one with assistant	33.50
	Organ, per quarter	33.50
	Voice, per quarter	33.50
	Violin, per quarter	33.50
	Painting, per quarter	15.00
Fourth year . .	<i>All courses leading to degrees, free to Kansas students.</i>	
	To receive free tuition in the fourth year, students must be of full Senior rank in all required subjects and must have been in attendance at the School of Fine Arts for at least two years.	
	For nonresidents the same as for the third year.	
	For all certificate courses the same as for the third year.	

Rates for Special Students.

The following rates are for the quarter of nine weeks, and cover only the subjects given:

Piano with Prof. Preyer, two a week	\$36.00
Piano with Prof. Preyer, one a week	20.00
Piano with Miss Greisinger, Miss Sweeney, or Mrs. Emley-Elliott, two a week	21.00
Piano with Miss Greisinger, Miss Sweeney, or Mrs. Emley-Elliott, one a week	11.00
Piano with Miss Miller, two a week	17.00
Piano with Miss Miller, one a week	9.00
Voice with Dean Butler, Prof. Downing, or Prof. Farrell, two a week	36.00
Voice with Dean Butler, Prof. Downing, or Prof. Farrell, one a week	20.00
Voice with Mrs. Olcott, two a week	21.00
Voice with Mrs. Olcott, one a week	11.00
Voice with Miss Reynolds, two a week	19.00
Voice with Miss Reynolds, one a week	10.00
Organ with Prof. Skilton, two a week	36.00
Organ with Prof. Skilton, one a week	20.00
Organ with Mrs. Emley-Elliott, two a week	21.00
Organ with Mrs. Emley-Elliott, one a week	11.00
Violin with Prof. Kendrie, two a week	27.50
Violin with Prof. Kendrie, one a week	15.00
Harmony, counterpoint, composition, in class, two a week	10.00

Harmony, counterpoint, composition, instrumentation, with Professor Skilton, two a week, privately.....	\$36.00
Harmony, counterpoint, composition, instrumentation, with Professor Skilton, one a week, privately.....	20.00
Sight singing, ear training and dictation, two a week in class....	5.00
Ensemble in class	3.00
Technic, in class	5.00
Public-school music courses in class.....	15.00
(Private lessons subject to special fees.)	
Teaching materials, piano (with practice teaching).....	3.00
Teaching materials, violin (with practice teaching).....	3.00
Violin in class for public-school music students.....	3.00
Rent of violin, bow and case.....	1.50
Drawing and painting, in class.....	15.00
Drawing and painting, in class (part time).....	7.50
Public-school drawing and painting, in class.....	15.00
Design, in class	15.00
Design, in class (part time).....	7.50

CURRICULUM.

In September, 1916, all courses of study in the School of Fine Arts were put on the basis of 120 semester hours. Students entering the school, then or thereafter, must, before graduation, present credits in all *required* subjects and enough additional credits in *optional* subjects to make up the sum of 120 semester hours. Other *optional* subjects than those given in the following curriculum may be offered for credit, by arrangement with the Dean.

PIANOFORTE.

Leading to the degree of Bachelor of Music.

During the first two years, piano students take their lessons from an assistant. Exceptions are sometimes made when students are willing to pay the Junior tuition rate, and Professor Preyer has time to accommodate them. Students who wish to receive a teacher's certificate in piano must during their course of study complete one year of piano Teaching Materials, with practice teaching.

FRESHMAN YEAR.

First Semester:

Piano 1, twice a week, by appointment. Assistants. (Five hours.)
 Technic (Piano 9), once a week, by appointment. Miller. (One hour.)
 Ear Training and Sight Singing 1, Tu. Th., at 8. Downing. (One hour.)
 Harmony (Musical Theory 1), M. W. F., at 9 and 1. Kendrie. (Three hours.)
 Rhetoric 1. (Three hours.)
 Physical Education 1, twice a week, by appointment.
 Recitals 1. (One hour.)

Second Semester:

Piano 2, twice a week, by appointment. Assistants. (Five hours.)
 Technic (Piano 10), W. at 3. Miller. (One hour.)
 Ear Training and Sight Singing 2, Tu. Th., at 1:30. Downing. (One hour.)
 Harmony (Musical Theory 2), M. W. F., at 9 and 1. Kendrie. (Three hours.)
 Rhetoric 2, two hours a week. (Two hours.)
 Physical Education 2, twice a week, by appointment.
 Recitals 2. (One hour.)

SOPHOMORE YEAR.

First Semester:

Piano 3, twice a week, by appointment. Assistants. (Five hours.)
 Technic (Piano 11), once a week, by appointment. Miller. (One hour.)
 Harmony (Musical Theory 3), Tu. Th., at 2. Skilton. (Two hours.)
 English 10, two hours a week. (Two hours.)
 History of Music 1, Th., at 4. Skilton. (One hour.)
 Recitals 3. (One hour.)
 Ensemble Playing 1. (One hour.)
 Any of the following optionals may be taken (private lessons are subject to fees):
 Vocal Culture 1, by appointment. (One and one-half or three hours.)

Free-hand Drawing. (Three hours.)
 German 1, daily. (Five hours.)
 French 1, daily. (Five hours.)
 Italian 1, three hours. (Three hours.)
 Spanish 1, five hours. (Five hours.)
 Teaching Materials, with practice teaching. (One hour.)

Second Semester:

Piano 4, twice a week, by appointment. Assistants. (Five hours.)
 Technic (Piano 12), once a week, by appointment. Miller. (One hour.)
 Harmony (Musical Theory 4), Tu. Th., at 3. Skilton. (Two hours.)
 English 11, three hours a week. (Three hours.)
 History of Music, W., at 2. Skilton. (One hour.)
 Recitals 4. (One hour.)
 Ensemble Playing 2. (One hour.)
 Any of the following optionals may be taken (private lessons are subject to fees):
 Vocal Culture 1, by appointment. (One and one-half or three hours.)
 Free-hand Drawing. (Three hours.)
 German 2, daily. (Five hours.)
 French 2, daily. (Five hours.)
 Italian 2, three hours. (Three hours.)
 Spanish 2, five hours. (Five hours.)
 Teaching Materials, with practice teaching. (One hour.)

JUNIOR YEAR.

First Semester:

Piano 5, twice a week, by appointment. Preyer. (Six hours.)
 Counterpoint (Musical Theory 5), Tu., at 2. Skilton. (One hour.)
 Composition (Musical Theory 7), Th., at 2. Skilton. (One hour.)
 History of Music, Tu. Th. Skilton. (Two hours.)
 English 12. History of English Literature. (Three hours.)
 Recitals 5. (One hour.)
 Ensemble Playing 3. (One hour.)
 Any of the following optionals may be taken (private lessons are subject to fees):
 Vocal Culture, by appointment. (One and one-half or three hours.)
 Drawing and painting. (Three hours.)
 German 1 or 3, daily. (Five hours.)
 French 1 or 3, daily. (Five hours.)
 Italian and Spanish as in Sophomore year.
 Teaching Materials, with practice teaching. (One hour.)

Second Semester:

Piano 6, twice a week, by appointment. Preyer. (Six hours.)
 History of Music, Tu. Th. Skilton. (Two hours.)
 Counterpoint (Musical Theory 6), M., at 2. Skilton. (One hour.)
 Composition (Musical Theory 8), Th., at 2. Skilton. (One hour.)
 English 14. History of English Literature. (Two hours.)
 Acoustics, M. W., third half-term. (One hour.)
 Recitals 6. (One hour.)
 Ensemble Playing 4. (One hour.)
 Thesis 1. Skilton. (One hour.)
 Any of the following optionals may be taken (private lessons are subject to fees):
 Vocal Culture, by appointment. (One and one-half or three hours.)
 Drawing and painting. (Three hours.)
 German 2 or 4, daily. (Five hours.)
 French 2 or 4, daily. (Five hours.)
 Italian and Spanish as in Sophomore year.
 Teaching Materials, with practice teaching. (One hour.)

SENIOR YEAR.

First Semester:

- Piano 7, twice a week, by appointment. Preyer. (Seven hours.)
- Canon and Fugue (Musical Theory 11), once a week, by appointment. Skilton. (One hour.)
- Recitals 7. (One hour.)
- Thesis 2. Skilton. (One hour.)
- Optionals as in previous years.
- Composition (Musical Theory 9), once a week, by appointment. Skilton. (One hour.)

Second Semester:

- Piano 8, twice a week, by appointment. Preyer. (Eight hours.)
- Instrumentation (Musical Theory 12), once a week, W., at 3. Skilton. (One hour.)
- Thesis 3. Skilton. (One hour.)
- Recitals 8. (One hour.)
- Optionals as in previous years.
- Composition (Musical Theory 10), once a week, by appointment. Skilton. (One hour.)

ORGAN.

Leading to the degree of Bachelor of Music.

Three-year course, open to those who have completed the work of the Freshman year in piano.

SOPHOMORE YEAR.

First Semester:

- Organ 1, once a week, by appointment. Skilton. (Five hours.)
- Piano 3, once a week, by appointment. Assistant. (Two hours.)
- Technic (Piano 11), once a week, by appointment. Miller. (One hour.)
- Harmony (Musical Theory 3), Tu. F., at 2. Skilton. (Two hours.)
- English 10, two hours a week. (Two hours.)
- History of Music, Th., at 3. Skilton. (One hour.)
- Recitals 3. (One hour.)
- Ensemble Playing 1. (One hour.)
- Any of the following optionals may be taken (private lessons are subject to fees):
- Vocal Culture, by appointment. One and one-half or three hours.)
- Free-hand Drawing. Griffith. (Three hours.)
- German 1, daily. (Five hours.)
- French 1, daily. (Five hours.)
- Italian 1, three hours. (Three hours.)
- Spanish 1. (Five hours.)
- Teaching Materials, with practice teaching. (One hour.)

Second Semester:

- Organ 2, once a week, by appointment. Skilton. (Five hours.)
- Piano 4, once a week, by appointment. Assistant. (Two hours.)
- Technic (Piano 12), once a week, by appointment. Miller. (One hour.)
- Harmony (Musical Theory 4), Tu. F., at 3. Skilton. (Two hours.)
- English 11, three hours a week. (Three hours.)
- History of Music, Th., at 3. Skilton. (One hour.)
- Recitals 4. (One hour.)
- Ensemble Playing 2. (One hour.)
- Any of the following optionals may be taken (private lessons are subject to fees):
- Vocal Culture, by appointment. (One and one-half or three hours.)
- Free-hand Drawing. Griffith.

German 2, daily. (Five hours.)
 French 2. (Five hours.)
 Italian 2. (Three hours.)
 Spanish 2. (Five hours.)

JUNIOR YEAR.

First Semester:

Organ 3, twice a week, by appointment. Skilton. (Five hours.)
 Counterpoint (Musical Theory 5), M., at 2. Skilton. (One hour.)
 Composition (Musical Theory 7), Th., at 2. Skilton. (One hour.)
 Organ 8, once a week, by appointment. Skilton. (One hour.)
 History of Music, Tu. and Th. Skilton. (Two hours.)
 English 12. History of English Literature. (Three hours.)
 Recitals 5. (One hour.)
 Ensemble Playing 3. (One hour.)
 Any of the following optionals may be taken (private lessons are subject to fees):
 Piano, by appointment. (Two or four hours.)
 Vocal Culture 1 or 2, by appointment. (One and one-half or three hours.)
 German 1 or 3 daily. (Five hours.)
 French 1 or 3, daily. (Five hours.)
 Italian and Spanish as in Sophomore year.
 Drawing and Painting 1 or 2. (Three hours.)
 Teaching Materials, with practice teaching. (One hour.)

Second Semester:

Organ 4, twice a week, by appointment. Skilton. (Five hours.)
 Composition (Musical Theory 8), Th., at 2. Skilton. (One hour.)
 Counterpoint (Musical Theory 6), M., at 2. Skilton. (One hour.)
 Organ 9, once a week, by appointment. Skilton. (One hour.)
 English 14. History of English Literature. (Two hours.)
 Acoustics, M. W., third half-term. (One hour.)
 History of Music, Tu. Th. Skilton. (Two hours.)
 Recitals 6. (One hour.)
 Ensemble Playing 4. (One hour.)
 Thesis 1. Skilton. (One hour.)
 Any of the following optionals may be taken (private lessons are subject to fees):
 Piano, by appointment. (Two or four hours.)
 Vocal Culture 1 or 2, by appointment. (One and one-half or three hours.)
 Drawing and Painting. (Three hours.)
 German 2 or 4, daily. (Five hours.)
 French 2 or 4, daily. (Five hours.)
 Italian and Spanish as in Sophomore year.
 Teaching Materials, with practice teaching. (One hour.)

SENIOR YEAR.

First Semester:

Organ 5, twice a week, by appointment. Skilton. (Six hours.)
 Canon and Fugue (Musical Theory 11), W. (One hour.)
 Church Music 7, once a week. Skilton. (One hour.)
 Recitals 7. (One hour.)
 Thesis 2. Skilton. (1 hour.)
 Optionals as in previous years.
 Composition (Musical Theory 9), once a week, by appointment.
 Skilton. (One hour.)

Second Semester:

Organ 6, twice a week, by appointment. Skilton. (Eight hours.)
 Instrumentation (Musical Theory 12), W., at 3. Skilton. (One hour.)
 Recitals 8. (One hour.)
 Thesis 3. Skilton. (One hour.)
 Optionals as in previous years.
 Composition (Musical Theory 10), once a week, by appointment.
 Skilton. (One hour.)

VIOLIN.

Leading to the degree of Bachelor of Music.

These courses are the same as the four-year course in piano, except that violin 1 to 8 take the place of piano 1 to 8, and orchestra 1 to 8 that of piano 9 to 12. Students must be able to play easy piano accompaniments or make up the deficiency by private lessons.

Violin students are required to play in the University Orchestra during their entire course, unless excused by the Dean on recommendation of the instructor.

Violin students desiring the teacher's certificate in violin must have completed one year of Teaching Materials in violin with practice teaching.

VIOLONCELLO.

These courses are the same as the first two years of the course in piano, except that violoncello 1 to 4 take the place of piano 1 to 4, and orchestra 1 to 4 that of piano 9 to 12. Student must be able to play easy piano accompaniments or make up the deficiency by private lessons.

Violoncello students are required to play in the University Orchestra during their entire course, unless excused by the Dean on recommendation of the instructor.

VOCAL CULTURE.

Leading to the degree of Bachelor of Music.

Students in the regular course in voice must be able to play accompaniments of moderate difficulty. Any deficiency in this respect must be made up by private lessons before entering the Junior year.

Voice students take their lessons with Dean Butler, Professor Downing or Professor Farrell; also in the Freshman and Sophomore years with Miss Reynolds and Mrs. Olcott.

Voice students are urged to take French 1 and 2 in the Junior or Senior year.

FRESHMAN YEAR.*First Semester:*

Vocal Culture 1, twice a week, by appointment. Butler, Downing, Farrell, Olcott or Reynolds. (Three hours.)
 Ear Training and Sight Singing 1, Tu. Th., at 8. Downing. (One hour.)
 Harmony (Music Theory 1), Tu. Th., at 2. Skilton. (Two hours.)
 Rhetoric 1, three hours a week. (Three hours.)
 Italian 1, three hours a week. (Three hours.)
 Physical Education 1, twice a week.
 Recitals 1. (One hour.)
 Chorus Singing 1. (One hour.)

Second Semester:

Vocal Culture 2, twice a week, by appointment. Butler, Downing, Farrell, Olcott or Reynolds. (Three hours.)
 Ear Training and Sight Singing 2, Tu. Th., at 8. Downing. (One hour.)

Harmony (Musical Theory 2), Tu. Th., at 2. Skilton. (Two hours.)
 Harmony (Musical Theory 1), M. W. F., at 2. Skilton. (Two hours.)
 Rhetoric 2, two hours a week. (Two hours.)
 Physical Education 2, twice a week.
 Recitals 2. (One hour.)
 Chorus Singing 2. (One hour.)
 Italian 2, three hours a week. (Three hours.)

SOPHOMORE YEAR.

First Semester:

Vocal Culture 3, twice a week, by appointment. Butler, Downing, Farrel, Reynolds or Olcott. (Three hours.)
 Harmony (Musical Theory 3), Tu. F., at 3. Skilton. (Two hours.)
 English 10, two hours a week. Two hours.)
 History of Music, Th., at 4. Skilton. (One hour.)
 Recitals 3. (One hour.)
 Chorus Singing 3. (One hour.)
 German 1. (Five hours.)
 Any of the following optionals may be taken (private lessons are subject to fees):
 Piano. Preyer or assistants. (Two or four hours.)
 Free-hand Drawing. Griffith. (Three hours.)
 French 1, daily. (Five hours.)
 Spanish 1, daily. (Five hours.)
 German 1, daily. (Five hours.)

Second Semester:

Vocal Culture 3, twice a week, by appointment. Butler, Downing, Farrell, Reynolds or Olcott. (Three hours.)
 Harmony (Musical Theory 4), Tu. F., at 3. Skilton. (Two hours.)
 English 11, three hours a week. (Three hours.)
 History of Music, Th., at 4. Skilton. (One hour.)
 Recitals 4. (One hour.)
 Chorus Singing 4. (One hour.)
 German 2. (Five hours.)
 Any of the following optionals may be taken (private lessons are subject to fees):
 Piano. Preyer or assistants. (Two or four hours.)
 Violin. Kendrie. (Two or four hours.)
 Free-hand Drawing. Griffith. (Three hours.)
 French 2, daily. (Five hours.)
 Spanish 2, daily. (Five hours.)
 German 2, daily. (Five hours.)

JUNIOR YEAR.

First Semester:

Vocal Culture 5, twice a week, by appointment. Butler, Downing, Farrell, or Olcott. (Four hours.)
 Counterpoint (Musical Theory 5), M., at 2. Skilton. (One hour.)
 Composition (Musical Theory 7), Th., at 3. Skilton. (One hour.)
 History of Music, Tu. Th. Skilton. (Two hours.)
 Recitals 5. (One hour.)
 Chorus Singing 5. (One hour.)
 French 1, daily. (Five hours.)
 Any of the following optionals may be taken (private lessons are subject to fees):
 Piano. Preyer or assistants.
 Violin. Kendrie. (Two or four hours.)
 Drawing and Painting. Griffith. (Three hours.)
 English 12. History of English Literature. (Three hours.)
 German 3, daily. (Five hours.)

French 1 or 3, daily. (Five hours.)
 Italian and Spanish as in Sophomore year.

Second Semester:

Vocal Culture 6, twice a week, by appointment. Butler, Downing, Farrell, or Olcott. (Four hours.)
 Counterpoint (Musical Theory 6), M., at 2. Skilton. (One hour.)
 Composition (Musical Theory 8), Th., at 2. Skilton. (One hour.)
 Acoustics, third half-term, by appointment. (One hour.)
 Recitals 6. (One hour.)
 Chorus Singing 6. (One hour.)
 History of Music, Tu. Th. Skilton. (Two hours.)
 French 2, daily. (Five hours.)
 English 14. History of English Literature. (Two hours.)
 Thesis 1. Skilton. (One hour.)
 Any of the following optionals may be taken (private lessons are subject to fees):
 Piano, by appointment. Preyer or assistants. (Two or four hours.)
 Drawing and Painting. Griffith. (Three hours.)
 German 4, daily. (Five hours.)
 French 2 or 4, daily. (Five hours.)
 Italian and Spanish as in Sophomore year.

SENIOR YEAR.

First Semester:

Vocal Culture 7, twice a week, by appointment. Butler, Downing, Farrell, or Olcott. (Five hours.)
 Canon and Fugue (Musical Theory 11), W., at 11. Skilton. (One hour.)
 Recitals 7. (One hour.)
 Chorus Singing 7. (One hour.)
 Thesis 2. Skilton. (One hour.)
 Vocal Seminar 1. Butler. (One hour.)
 Optionals as in previous years.
 Composition (Musical Theory 9), once a week, by appointment. Skilton. (One hour.)

Second Semester:

Vocal Culture 8, twice a week, by appointment. Butler, Downing, Farrell or Olcott. (Five hours.)
 Recitals 8. (One hour.)
 Chorus Singing 8. (One hour.)
 Instrumentation (Musical Theory 12), W., at 2. Skilton. (One hour.)
 Thesis 3. Skilton. (One hour.)
 Vocal Seminar 2. Butler. (One hour.)
 Optionals as in previous years.
 Composition (Musical Theory 9), by appointment. Skilton. (one hour.)

DRAWING AND PAINTING.

Leading to the degree of Bachelor of Painting.

Students in drawing and painting are required to furnish their own materials, except easels.

All art work, when finished, is under the control of the instructors until after the close of the public exhibition of student work, at the end of the academic year.

First Semester:

FRESHMAN YEAR.

Drawing 1, daily, 9 to 12. Griffith and Frazier. (Five hours.)
 Drawing 13a, Composition, Tu. Th., at 2. Hekking. (Two hours.)

Drawing 19, Artistic Anatomy, Tu. Th., at 3. Hekking. (Two hours.)
 Drawing 17, Perspective, Tu. Th., at 8. Griffith. (Two hours.)
 English 10, Tu. Th., at 1. (Two hours.)
 Rhetoric 1, M. W. F., at 1, 2 or 3. (Three hours.)

Second Semester:

Drawing 2, daily, at 9 to 12. Griffith, Frazier. (Five hours.)
 Drawing 28, Design. M. W. F., at 2 to 4. Benson. (Two hours.)
 Drawing 13b, Composition, Tu. Th., at 2. Hekking. (Two hours.)
 Drawing 4 or 18, Painting or Modeling, daily, at 8. Griffith, Hekking. (Two hours.)
 English 11, M. W. F., at 1. (Three hours.)
 Rhetoric 2, Tu. Th., at 1 or 3. (Two hours.)

SOPHOMORE YEAR.

First semester:

Drawing 3, Life Class daily, 9 to 12. Hekking, Frazier. (Five hours.)
 Drawing 29, Design, M. W. F., 1 to 3. Benson. (Two hours.)
 Drawing 14a, Composition, Tu. Th., at 2. Hekking. (One hour.)
 Drawing 25, History of Painting, Tu. Th., at 9. Griffith. (Two hours.)
 Drawing 5, Painting, daily, 3 to 4. Griffith, Hekking. (Two hours.)
 Three hours in College, selected from English 12, French 1 and 2, German 1 and 2, Spanish 1 and 2, Philosophy 1 and 2, Zoölogy 1, and History 1, M. W. F., at 8.

Second Semester:

Drawing 6, daily, 9 to 12. Griffith, Hekking. (Five hours.)
 Drawing 7 or 30, M. W. F., 2 to 4. Griffith, Hekking. (Two hours.)
 Drawing 14b, Composition, Tu. Th., at 2. Hekking. (Two hours.)
 Drawing 26, American Painting, Tu. Th., at 9. Griffith. (Two hours.)
 Three hours selected from English 12, French, German, Spanish, Philosophy, or History, M. W. F., at 1.

JUNIOR YEAR.

First Semester:

(For students of Painting.)

Drawing 8 or 9, Painting, daily, 9 to 12. Griffith, Hekking, Frazier. (Five hours.)

Drawing 20, Advanced Artistic Anatomy, Tu. Th., at 1. Hekking. (Two hours.)

Drawing 21, Sketch Class, M. W. F., at 3. Griffith, Hekking. (Two hours.)

Drawing 15a, Composition, Tu. Th., at 2. Hekking. (One hour.)

Five hours in the College, selected from English 50, French, German, Spanish, History or Greek Architecture 61.

(For students of Design.)

Drawing 8, daily, 9 to 12. Griffith, Hekking, Frazier. (Five hours.)

Drawing 31, Design, daily, 1 to 4. Benson. (Five hours.)

Greek Architecture 61, Tu. Th., at 11. (Two hours.)

Three hours selected from above list in the College.

Second Semester:

(For students of Painting.)

Drawing 10, Painting, daily, 9 to 12. Griffith, Hekking. (Five hours.)

Drawing 15b, Composition, Tu. Th., at 2. Hekking. (Three hours.)

Drawing 27, Art Criticism, Tu. Th., at 8. Hekking. (Two hours.)

Drawing 22, Sketch Class, M. W. F., at 3. Griffith, Hekking. (Two hours.)

Three hours selected from the College, as in the first semester.

(For students of Design.)

Drawing 23, Design, daily, 9 to 12. Benson. (Five hours.)

Drawing 15b, Composition, Tu. Th., at 2. Hekking. (Three hours.)

Drawing 27, Art Criticism, Tu. Th., at 8. Hekking. (Two hours.)

Greek Sculpture and Painting, Tu. Th., at 11. (Two hours.)

Three hours selected from the College, as in the first semester.

SENIOR YEAR.

First Semester:

(For students of Painting.)

Drawing 11, daily, 9 to 12. Griffith, Hekking. (Five hours.)

Drawing 16a, Composition, Tu. Th., at 2. Hekking. (Five hours.)

Drawing 23, Sketch Class, M. W. F., at 2. Griffith, Hekking, Frazier. (Two hours.)

Three hours selected in the College, as in Junior year.

(For students of Design.)

Drawing 33, Applied Design, daily, 8 to 12. Benson. (Five hours.)

Drawing 16a, Composition, Tu. Th., at 2. Hekking. (Five hours.)

Drawing 35, History of Ornament, Tu. Th., at 1. Griffith. (Two hours.)

Three hours selected in the College, as in the Junior year.

Second Semester:

(For students of Painting.)

Drawing 12, daily, 9 to 12. Griffith, Hekking. (Five hours.)

Drawing 16b, Composition, Tu. Th., at 2. Hekking. (Three hours.)

Drawing 24, Sketch Class, M. W. F., at 3. Hekking, Frazier. (Two hours.)

Drawing 38, Graduation Thesis. (Two hours.)

Three hours selected in College, or the School of Education.

(for students of Design.)

Drawing 34, Applied Design, daily, 8 to 11. Benson. (Five hours.)

Drawing 16b, Composition, Tu. Th., at 2. Hekking. (Three hours.)

Drawing 36, History of Ornament, Tu. Th., at 1. Griffith. (Two hours.)

Drawing 38, Graduation Thesis. (Two hours.)

Three hours selected in the College or School of Education.

PUBLIC-SCHOOL MUSIC COURSE.

Leading to Teacher's Certificate in Public-school Music.

Professor: DOWNING.

The course in public-school music is designed to prepare students to become teachers and supervisors of music in grade and high schools. Only the best modern methods are employed, and the training is so closely graded that, at the end of the course, the student has prepared full courses of music study for all grades, beginning with the kinder-

garten and ending with the senior year of the high school. Actual teaching experience is gained by conducting classes in the Oread High School and by training classes of children. Special attention is given to correct methods of conducting.

At least one year of study in singing is required of students who prefer piano as a major. Ability to play the simpler compositions for piano or other instruments is required of students who take singing as a major.

Students must attend the University Chorus rehearsals during both years of the course, unless they are members of an acceptable church choir.

Teachers with normal training or experience in public schools and some preparatory work in music may be able to complete the two-year course in one year, or in one year and a summer term. Credit is allowed for teaching experience or normal training in accredited schools. Upon the completion of this course the State Board of Education will issue a special certificate entitling the holder thereof to teach music in any of the grade or high schools of the state.

As there is such a demand for orchestras in the high schools, a class in violin playing has been formed for the students in this course. In this class proper methods of fingering and bowing are taught, and the student is given practical experience in the use of the violin as an orchestral instrument.

The School of Fine Arts rents violins to those students who may not possess an instrument.

Candidates for this certificate must offer 60 credit hours. The subjects in the following curriculum are *required*. Other subjects to complete the necessary 60 hours may be offered from the School of Fine Arts, the College and the School of Education, by arrangement with the Dean.

FRESHMAN YEAR.

First Semester:

Methods of Teaching Music in Elementary Schools 1. Downing.

(Two hours.)

Sight Singing 1, Tu., at 1. Downing. (One-half hour.)

Ear Training, Th., at 1. Downing. (One-half hour.)

Harmony (Musical Theory 1), at 9 and 1. Kendrie. (Three hours.)

History of Music, Th., at 3. Skilton. (One hour.)

Choral Practice 1. (One hour.)

Voice or piano lessons by appointment.

(Private lessons are subject to fees.)

Second Semester:

Methods of Teaching Music in Elementary Schools 2. Downing.

(Two hours.)

Sight Singing 2, Tu., at 1. Downing. (One-half hour.)

Ear Training 2, Th., at 1. Downing. (One-half hour.)

Harmony (Musical Theory 2), at 9 and 1. Kendrie. (Three hours.)

History of Music, Th. Skilton. (One hour.)

Choral Practice 2. (One hour.)

Recitals 2. (One hour.)

Methods of Teaching, three hours. (School of Education.) (Three hours.)

Voice or piano lessons by appointment.

(Private lessons are subject to fees.)

SOPHOMORE YEAR.

First Semester:

Methods of Teaching Music in the Upper Grades and in the High Schools 3. Downing. (Two hours.)

Practice Teaching by appointment. (One hour.)

Sight Singing 3, Tu., at 1. Downing. (One-half hour.)
 Ear Training 3, Th., at 1. Downing. (One half-hour.)
 Harmony (Musical Theory 3), Tu. F., at 2. Skilton. (Two hours.)
 History of Music, Tu. Th. Skilton. (Two hours.)
 Choral Practice 3. (One hour.)
 Recitals 3. (One hour.)
 General Psychology, three hours. (Three hours.)
 Voice or piano lessons by appointment.
 (Private lessons are subject to fees.)

Second Semester:

Methods of Teaching Music in High Schools 4. Downing. (Two hours.)
 Practice Teaching, by appointment. (One hour.)
 Sight Singing 4, Tu., at 1. Downing. One-half hour.)
 Ear Training 4, Th., at 1. Downing. (One-half hour.)
 Harmony (Musical Theory 4), Tu. F., at 2. Skilton. (Two hours.)
 History of Music, Tu. Th. Skilton. (Two hours.)
 Instrumentation (Musical Theory 12). W., at 2. Skilton. (One hour.)
 Choral Practice 4. (One hour.)
 Recitals 4. (One hour.)
 Voice or piano lessons by appointment.
 (Private lessons are subject to fees.)
 Elementary Education, three hours, at 8:30. (School of Education.)
 (Three hours.)
 Optional: Folk dances, singing and dancing games, by appointment.

PUBLIC-SCHOOL ART COURSE.

Leading to Teacher's Certificate in Public-school Art.

Professors: GRIFFITH, HEKKING.

Assistant Professor: FRAZIER.

Instructor: BENSON.

The course in public-school art is designed to prepare students to become teachers and supervisors of art in grade and high schools. In addition to the work in methods of teaching art in the public schools, strict attention is given to actual practice in free-hand drawing, perspective, composition, design, and artistic anatomy. To comply with the regulations of the State Board of Education, nine hours of educational work in the College and the School of Education is included in the course. Upon the completion of this course the State Board of Education will issue a special certificate entitling the holder thereof to teach art in any of the grade or high schools of the state.

SYLLABUS.

The course is a two-year course, requiring sixty credit hours for its completion.

For a description of these courses, see Drawing and Painting, on page 260.

Free-hand Drawing (courses 1, 2, 3 and 4)	12 credit hours.
Perspective (course 17)	2 credit hours.
Composition (courses 13a and 13b)	4 credit hours.
Design (courses 28, 29, 31, and 32)	14 credit hours.
Artistic Anatomy (course 19)	2 credit hours.
Art History (courses 25 and 26)	4 credit hours.
Methods of Teaching Art in the Grade and High Schools (course 37)	8 credit hours.
(a) Normal Art Methods, two hours. A general survey of the problems of art instruction in the public schools. High-school drawing and methods of teaching.	
(b) Normal Art Methods. Two hours. Design, pure and applied in the high school.	

- (c) Normal Art Methods. Two hours. Art appreciation for the public school. Materials and methods of teaching.
- (d) Normal Art Methods. Two hours. Study of courses for art instruction in the high school, their organization and selection of materials.

General Psychology Ia (The College)	3 credit hours.
Methods of Teaching I (The School of Education)	3 credit hours.
Elementary Education 2 (The School of Education)	3 credit hours.
Optional subjects from The School of Fine Arts, The College, or The School of Education	5 credit hours.
Total	<hr/> 60 credit hours.

DESCRIPTION OF COURSES.

The courses in English, French, Italian, German, Greek, Physical Education and Physics are given in the College. They are open to regular fine arts students, on application to the Dean of the School of Fine Arts, but students must also enroll with the Dean of the College.

DRAWING AND PAINTING.

Professors: GRIFFITH, HEKKING.

Assistant Professor: FRAZIER.

Instructor: BENSON.

All courses are required of students of drawing and painting and are open to other students of the School of Fine Arts who are prepared for them.

1.—FREE-HAND DRAWING. Free-hand drawing from the cast, in charcoal. The method of instruction aims to teach construction in a simple and correct manner. Freshmen, first semester, daily, 9 to 12.

2.—FREE-HAND DRAWING. Free-hand drawing in charcoal from objects of still life, the head and cast. Freshmen, second semester, daily, 9 to 12.

3.—FREE-HAND DRAWING. Free-hand drawing from the living model, in charcoal. This class gives the student an opportunity to study the human figure, as offered in all regular art schools. Sophomore, first semester, daily 9 to 12.

4.—PAINTING. Painting with oil, water-color or pastel from still life. Students begin the study of color in this class. The observation and reproduction of simple masses of form and color. Freshmen, second semester, daily, at 8.

5.—PAINTING. Advanced course in painting from still life in which the student makes studies of the wonderful art objects in the Thayer Art Museum. Sophomore, first semester, daily, at 3.

6.—PAINTING. Painting from the living model. Students begin the study of portrait painting in the class. Sophomore, second semester, daily, 9 to 12.

7.—PAINTING. Painting from landscape. The scenery around Lawrence is very picturesque. Abundant material is to be found on the campus of the University for the study of landscape painting at all times of the year. Sophomore, second semester, M. W. F., 1 to 4.

8.—PAINTING. A continuation of course 6, for advanced portrait painting or the painting of the nude human figure. Junior first semester, daily, 9 to 12.

9.—PAINTING. A continuation of course 7, for advanced landscape painting with special attention given to cloud effects, early morning and evening. Junior, First semester, daily 8 to 11.

10.—PAINTING. Painting from life or landscape as student may elect. Junior, second semester, daily, 9 to 12, or 2 to 5.

11.—PAINTING. A continuation of course 10. Senior, first semester, daily 9 to 12, or 1 to 4.

12.—PAINTING. A continuation of course 11. Senior, second semester, daily, 9 to 12, or 1 to 4.

Courses 11 and 12 are the most advanced course in painting. The student selects the materials in either landscape or the human figure.

For a part of the time the model is posed in the open air and original compositions are completed from nature.

13a-b, 14a-b, 15a-b, 16a-b.—COMPOSITION. Throughout the entire course every student is required to study the compositions of the masters and to make each week one original composition upon a given subject. Tu. Th., at 2.

17.—PERSPECTIVE. Linear perspective and the geometrical problems of mechanical drawing. Special attention is given to graphic methods that are of practical use in laying out a drawing. Freshmen, first semester, Tu. Th., at 8.

18.—MODELING.—Modeling in clay from the cast. Copies are made from simple models, to illustrate the methods of building up form in clay, and coating them in plaster.

19.—ARTISTIC ANATOMY. Freshmen, first semester, Tu. Th., at 3.

20.—ARTISTIC ANATOMY. An advanced course for Juniors. First semester, Tu. Th., at 1.

Courses 19 and 20 make a thorough study, from a textbook with lectures, of the bones and muscles of the human figure and the horse. Many drawings are made from the skeleton and anatomical casts.

21, 22, 23, 24.—SKETCH CLASS. Junior and Senior, both semesters. all classes in the school meet together in this class to make quick-time sketches, to show the action of the model selected. The model may be the draped human figure or some animal. M. W. F., at 3.

25.—HISTORY OF MODERN PAINTING. With lectures, illustrated by lantern slides and reading in the library, covering the principal schools of painting in Europe. Sophomore, first semester, Tu. Th., at 3.

26.—HISTORY OF AMERICAN PAINTING. The art of painting in the United States from its beginning to the present time. Lectures illustrated with original works of art and lantern slides, together with reading in the library. Sophomore, second semester, Tu. Th., at 9.

27.—ART CRITICISM. A study of pictures from an analytical point of view, taking up the ideals and aims of the artist in making of his product. Junior, second semester, Tu. Th., at 8.

28.—DESIGN. Elementary design. Freshmen, second semester, M. W. F., 2 to 4.

The aim of this course is to give the student a thorough training in the fundamental principles of design, as applied to the requirements of industry. The observation of the beauty of forms and color in plants, trees and landscape, with special emphasis upon the influence of locality in the development of artistic expression. In design 28 the elementary principles which underlie pattern are worked out in harmonies of lines, masses and values.

29.—DESIGN. A continuation of course 28. Sophomore, first semester, M. W. F., 1 to 3. Harmonies of color are worked out by water-color rendering of original designs.

30.—DESIGN. Advanced design. Sophomore, second semester, M. W. F., 2 to 4. Original designs are worked out for pottery, embroidery (Tussah silks are used on hand-woven linens) stenciling, wood-block printing, wood carving, modeled leather and book plates.

31.—DESIGN. Specialization. The application of design as applied to the production of ceramic art, metal work, textile, leather, or wood work. Junior, first semester, daily, 1 to 4.

32.—DESIGN. A continuation of course 31. Junior, second semester, daily, 9 to 12.

33.—DESIGN. A continuation of course 32. Senior, first semester, daily, 9 to 12.

34.—DESIGN. A continuation of course 33. Senior, second semester, daily, 8 to 11.

35.—HISTORY OF DESIGN. The general principles of historic ornament. Senior, first semester, Tu. Th., at 1.

36.—HISTORY OF DESIGN. A continuation of course 35, with special reference to the history of ceramic art and textiles. Senior, second semester, Tu. Th., at 1.

37.—NORMAL ART. Time to be arranged. See description on page 264.

38.—GRADUATION THESIS. Every student receiving a degree from the University must leave with the department an example of original work made during the Senior year, the studies and design for same to be approved by the head of the department before the end of the first semester.

ENSEMBLE.

Professor: KENDRIE.

Assistant Professor: GREISSINGER.

1.—ENSEMBLE. The study of simple ensemble, beginning with the duet form and advancing to work at two pianos; symphonies by Haydn, Mozart, Beethoven; famous overtures; compositions by Grieg, Moszkowski, Bizet, Schubert, Jensen, Mendelssohn. Sophomore, first semester, F., at 3. Greissinger.

2.—ENSEMBLE. Continuation of Ensemble 1. Arrangements of classics for two pianos, four and eight hands; original two-piano compositions by Arensky, Debussy, Saint-Saëns, Chaminade, Grieg, Schumann. Sophomore, second semester, F., at 3. Greissinger.

3.—ENSEMBLE. The study of compositions for strings and piano. Compositions for two violins and piano by Purcell, Carse and others; for three violins and piano by Taylor, Trousselle, Rieding, Hayward, together with the smaller orchestral compositions of Bizet, Wagner, Nesler, Moszkowski, Saint-Saëns, etc. Junior, first semester, M., 2 to 4. Kendrie.

4.—ENSEMBLE. Continuation of Ensemble 3. The study of the larger forms of composition; Trios by Schubert, Beethoven, Strauss, Moszkowski; sonatas for violin and piano by Grieg, Gade, Brahms and Franck; concertos by De Beriot, Mendelssohn, Saint-Saëns and Wieniawski; string quartets by Haydn, Mozart, Schubert and Beethoven. Junior, second semester, M., 2 to 4. Kendrie.

ENGLISH LANGUAGE AND LITERATURE.

Professors: DUNLAP, HOPKINS, O'LEARY.

Associate Professors: WHITCOMB, JOHNSON, SISSON, LYNN.

Assistant Professor: GARDNER.

1.—RHETORIC AND ENGLISH COMPOSITION. Three hours, first semester. Required of all Freshmen in the School of Fine Arts.

Gardner and assistants.

2.—RHETORIC AND ENGLISH COMPOSITION. Two hours, second semester. A continuation of course 1. Required of all Freshmen in the School of Fine Arts.

Gardner and assistants.

10.—ENGLISH LITERATURE. Two hours, first semester. Required of all Sophomores in the School of Fine Arts. Johnson and assistants.

11.—ENGLISH LITERATURE. Three hours, second semester. A continuation of course 10. Required of all Sophomores in the school of Fine Arts.

Johnson and assistants.

12 and 13.—HISTORY OF ENGLISH LITERATURE. 12, three hours; 13, two hours, first semester. An elective for Juniors in the School of Fine Arts.

Lynn and assistants.

14 and 15.—HISTORY OF ENGLISH LITERATURE. 14, two hours credit; 15, three hours credit, second semester. Course 14 is a continuation of course 12 and course 15, of course 13; 12 and 14, or 13 and 15 are required for admission to all subsequent courses in English Literature.

Lynn and assistants.

50.—NARRATION AND DESCRIPTION. Three hours, first semester.

O'Leary and Lynn.

51.—NARRATION AND DESCRIPTION. Two hours, second semester. A continuation of course 50.

O'Leary and Lynn.

71.—AMERICAN LITERATURE I. Three hours credit. First semester, at 1.

Hopkins.

72.—AMERICAN LITERATURE II. Three hours credit. Second semester, at 1.

Hopkins.

76.—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Three hours, first semester.

Dunlap.

77.—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Three hours, second semester.

Dunlap.

78.—SHAKSPERE. Three hours, both semesters.

Dunlap.

87.—THE ENGLISH NOVEL. Three hours, second semester.

Dunlap.

FRENCH.

Professor: GALLOO.

Associate Professor: NEUEN SCHWANDER.

Assistant Professors: STANTON, GARDNER.

1.—ELEMENTARY FRENCH I. Five hours, both semesters.

Neuen Schwander and assistants.

2.—ELEMENTARY FRENCH II. Five hours, both semesters.

Neuen Schwander, Stanton

3.—MODERN FRENCH PROSE. Three hours, both semesters.

Neuen Schwander, Stanton, Gardner.

4.—COMPOSITION. Two hours, both semesters.

Stanton.

GERMAN.

Professors: THURMAN, ENGEL.

1.—ELEMENTARY GERMAN. Five hours credit, both semesters.

Engle and assistants.

2.—PROSE READINGS. Five hours credit, both semesters.

Engle and assistants.

3.—INTERMEDIATE GERMAN. Five hours credit, both semesters.

Engle and assistants.

4.—GERMAN CLASSICS. Five hours credit, both semesters.

Engle and assistants.

The following courses are arranged for regular students of voice, and are required in the Sophomore year:

1.—GERMAN GRAMMAR (Fine Arts). Vos's Essentials of German, with emphasis on correct pronunciation and sentence melody. First semester, M. W. F., at 8. (Three hours.)

2.—GERMAN READING (Fine Arts). Vos's Essentials of German completed. Reading of easy German prose, and selected lyric poems. Second semester, M. W. F., at 8. (Three hours.)

GREEK.

*Professor: WILCOX.**Associate Professor: BRANDT.*

69.—GREEK ARCHITECTURE. Two hours, first semester. Brandt.

70.—GREEK SCULPTURE AND PAINTING. Three hours credit. Second semester. Brandt.

HISTORY OF MUSIC.

Professor: SKILTON.

Textbook, "The Study of the History of Music," by Edward Dickinson, published by Scribners. Lectures and recitations, with musical illustrations by instructors, members of the class, and on the Victrola, making the students familiar with the actual music of the period studied. Outside reading and preparation of a paper is required for each recitation, and a notebook must be handed in at the end of each semester.

1.—HISTORY OF MUSIC. Primitive music; savage and oriental music; music of the ancient cultured nations; music of the early Christian church; the Roman Catholic liturgy and chant; popular music in the Middle Ages; the beginnings of polyphonic music; age of the Netherlanders; choral music in the sixteenth century; early German Protestant music; Protestant church music in England; beginning of the opera and the monodic style; growth of instrumental music; organ, violin and piano. First semester, W. at 2. (One hour.) Skilton.

2.—HISTORY OF MUSIC. Italian opera, serious and comic, in seventeenth and eighteenth centuries; opera in France and England in seventeenth century; Italian style in German church music; Bach and Handel; opera comique in the eighteenth century; Gluck, Haydn, and Mozart. Second semester, W., at 2. (One hour.) Skilton.

3.—HISTORY OF MUSIC. Beethoven; Weber and the romantic opera; Schubert and the German song; piano playing to 1830; Schumann, Mendelssohn and Chopin; program music; Berlioz and Liszt; Italian and French opera in first half of the nineteenth century. First semester, Tu. Th., at 3. (Two hours.) Skilton.

4.—HISTORY OF MUSIC. Wagner and the opera; modern music of Germany and Austria; modern music of France and Italy; modern Slavonic and Scandinavian music; modern music in England and America; the ultra-modern movement. Second semester, Tu., Th., at 3. Skilton.

ITALIAN.

*Professor: GALLOO.**Assistant Professor: CRAM.*

Required of all Freshmen in the vocal course leading to a degree.

1.—ELEMENTARY ITALIAN I. Three hours credit, first semester. Cram.

2.—ELEMENTARY ITALIAN II. Continuation of course I. Three hours credit, second semester, by appointment. Cram.

MUSICAL THEORY.

Professors: SKILTON, KENDRIE.

All of the following courses are required of all students in the diploma music courses, excepting 9 and 10, which are optional.

Courses 1 to 8 are required of all candidates for the three-year teacher's certificates.

Courses 1 to 4, and 12 are required of all candidates for the two-year certificates in public-school music.

1.—HARMONY. The study of overtones, scales, intervals, triads and seventh chords and their inversions. The practical work consists of harmonizing melodies in soprano or bass and playing chord progressions at the piano. Freshman, first semester, M. W. F., at 9 and 1; second semester, M. W. F., at 11. Anger's Harmony used. Kendrie.

2.—HARMONY. The study of close and open harmony, dominant ninth and diminished seventh chords, modulations. Practical work continued. Freshman, second semester, M. W. F., at 9 and 1. Kendrie.

3.—HARMONY. The study of modulation, irregular resolutions, altered chords, suspensions, passing tones, organ point, harmonization of florid melodies. Practical work continued. Sophomore, first semester, Tu. Th., at 2. Skilton.

4.—HARMONY. Suspensions, passing tones, appoggiaturas, neighboring tones, organ point, harmonization of florid melodies, analysis. Practical work continued. Sophomore, second semester, Tu. Th., at 2. Skilton.

5.—COUNTERPOINT. The different orders of single counterpoint in two, three and four parts. Junior, first semester, M., at 2. Skilton.

6.—COUNTERPOINT. Double and triple counterpoint, counterpoint in the twelfth and fifteenth and in more than four parts. Modern counterpoint. Junior, second semester, M., at 2. Skilton.

7.—MUSICAL COMPOSITION. The theme and variation, dance and song forms. Analysis of classical models, and practical work. Junior, first semester, Th., at 3. Skilton.

8.—MUSICAL COMPOSITION. The sonata and rondo forms; analysis of classical sonatas; original work. Junior, second semester, Th., at 3. Skilton.

9.—MUSICAL COMPOSITION. Original work in modern forms. Open only to those who show talent for composition. Senior, first semester, W., at 9. Skilton.

10.—MUSICAL COMPOSITION. Continuation of course 9. These two courses are not required, and are open only to those who show talent for composition. Senior, second semester, W., at 3. Skilton.

11.—CANON AND FUGUE. The various forms of canon and their use in composition. The fugue and original work. Senior, first semester, W., at 3. Skilton.

12.—INSTRUMENTATION. The nature and treatment of the different instruments of the orchestra. The overture, symphony, cantata. Practical work for the University Orchestra. Senior, second semester, W., at 3. Skilton.

ORGAN.

Professor: SKILTON.

Instructors: EMLEY, ELLIOTT.

1.—MANUAL AND PEDAL STUDIES. Merkel or Archer. Pedal scales and arpeggios; the principles of hymn playing. Sophomore, first semester, one hour a week, by appointment.

2.—MANUAL AND PEDAL STUDIES. Buck's Studies in Pedal Phrasing; Schmidt's Organ Etudes; Bach's Little Preludes and Fugues, Flagler's The Organist's Treasury, and other selections. Sophomore, second semester, one hour, by appointment.

3.—SERVICE AND SOLO PLAYING. Buck's Choir Accompaniment. Various styles of hymn playing; accompaniment of solo and chorus. Schneider's Pedal Studies, easier preludes and fugues of Bach and Mendelssohn. Modern pieces by Batiste, Lemmens, Guilmant, and others. Junior, first semester, two hours, by appointment.

4.—SERVICE AND SOLO PLAYING. Arrangement of piano accompaniment for organ. Practice in accompanying singers. The easier sonatas

of Mendelssohn, Merkel, Guilmant, and others. Junior, second semester, two hours, by appointment.

5.—CHURCH AND CONCERT PLAYING. Practical work in playing the church service. The more difficult fugues and sonatas. Concert pieces by Widor, Guilmant, Saint-Saëns, Thiele, and others. Senior, first semester, two hours a week, by appointment.

6.—CHURCH AND CONCERT PLAYING. Extemporization and transposition. Program making. Preparation of a recital. Senior, second semester, two hours a week, by appointment.

7.—CHURCH MUSIC. The history of church music, examination of different schools and styles. Senior, first semester, one hour a week.

8 and 9.—ORGAN CONSTRUCTION. Examination of tracker, tubular pneumatic, and electric action in available organs. Practice in tuning. One hour a week, Junior year, by appointment.

PIANOFORTE.

Professor: PREYER.

Assistant Professors: GREISSINGER, SWEENEY.

Instructors: MILLER, EMLEY, ELLIOTT.

Courses 1 to 12, inclusive, are open only to students of the School of Fine Arts.

1 and 2.—PIANO. Hanon: Virtuoso Pianist. A limited number of studies from the following: Hoffman, Etudes for the Left Hand; Cramer-Buelow, Sixty Selected Etudes; Preyer, Twenty Etudes, op. 25 (Schirmer); Bach, two-part inventions (Litolff, No. 42), etc. Sonatas by Haydn, Mozart, Beethoven. Selections from classic and modern compositions. Freshman, throughout the year, twice a week, by appointment. Assistants.

3 and 4.—PIANO. Pischna: Technical Exercises. Etudes, selected according to the needs of the pupil, from Jensen, op. 32; MacDowell, op. 39; Haberbier, Etudes Poesies, op. 53; Preyer, op. 30 and op. 45; Hollaender, intermezzi for left hand; Bach, three-part inventions. Concertos by Mozart, Hummel, etc. Selections from classic and modern compositions. Sophomore, throughout the year, twice a week, by appointment. Assistants.

5 and 6.—Phillip: Daily Exercises. Clementi's Gradus ad Parnasum; Etudes from Moscheles, op. 70; Seeling, Concert Etudes, op. 10; Chopin, Preludes; Bach, Well-tempered Clavichord (Reinecke, B. and H.); concertos by Beethoven, Mendelssohn, etc.; concert pieces by classic and modern composers. Junior, throughout the year, private lessons, twice a week, by appointment. Preyer.

7 and 8.—Joseffy: School of Advanced Piano Playing. Philipp, Etudes for the Left Hand; Etudes for Chopin, op. 10 and op. 25; Rubinstein, op. 23, etc. Sonatas and concertos by Beethoven, Weber, Grieg, etc. Concert pieces by modern composers. Senior, throughout the year, private lessons, twice a week, by appointment. Preyer.

9 to 12.—A course for the study of pianoforte methods, aiming to develop independence of the fingers, and acquiring correct habits of practicing the scales, arpeggios, trills octaves, chords, etc. Freshman and Sophomore, throughout the year. Wednesday, 3 to 4. Miller.

13 and 14.—TEACHING MATERIALS. A study of teaching materials for piano. Each pupil is required to keep a notebook, teach one practice student and attend a one-hour class each week. Open to all classes but Freshman, and to advanced special students. Twice a week, throughout the year, by appointment. Required of all candidates for the three-year teacher's certificate in piano. Greissinger.

PHYSICAL EDUCATION.*Professor:* HAMILTON.*Associate Professor:* SHERBON.

- 1.—MARCHING. First semester.
- 2.—ADVANCED WORK. Second semester.
- 3.—EDUCATIONAL WORK WITH LIGHT AND HEAVY APPARATUS. First semester.
- 4.—SPECIALIZING IN SOME LINE OF EXERCISE. Second semester.

PHYSICS.*Professor:* KESTER.*Assistant Professor:* STIMPSON.

- 2.—ELEMENTARY ACOUSTICS. A course of about twenty lectures, with demonstrations, upon the scientific basis of harmony. Required of students of the School of Fine Arts. Third half-term, M. W., at 4. Given in alternate years. Offered in 1918-19. Stimpson.

PUBLIC-SCHOOL MUSIC.**Music Supervisors' Course.***Professor:* DOWNING.

- 1.—TEACHING OF MUSIC IN ELEMENTARY SCHOOLS. Methods and materials for grades 1, 2 and 3. Logical development in teaching; rote song; songs of the seasons; staff notation; voice training; scales without technical explanation; scales with technical explanation; use of paper keyboards; ear training; rhythm tapping; reading at sight; games and plays. Downing.

- 2.—TEACHING OF MUSIC IN ELEMENTARY SCHOOLS. Methods and materials for grades 4, 5 and 6. Two- and three-part songs; vocal development; ear training; sight singing; dictation; music appreciation; games and plays. Downing.

General Pedagogical Problems.—Advantage of normal training; relation of supervisor to grade teacher, principal, and superintendent; types of children. Examination of books and materials for the first six grades.

- 3.—TEACHING OF MUSIC IN UPPER GRADES AND HIGH SCHOOL. Methods and materials for grades 7 and 8, and the first year of the high school. Three- and four-part songs; treatment of unchanged and changed voices; sight singing; ear training; melodic and rhythmic dictation; simple modulations; the bass voice. Downing.

- 4.—TEACHING OF MUSIC IN THE HIGH SCHOOL. High-school music from artistic and scientific viewpoints. Choral singing (including sight singing); girls' and boys' glee clubs; high-schools orchestra; classes in history and theory (harmony, ear training, analysis). Outlines for courses of study in logical development of teaching the simpler forms of musical theory, suitable for use in high schools. Downing.

General Pedagogical Problems.—The city music supervisor as high-school teacher of music; preparation of University graduates for teaching music and some other subject; the relation of the music teacher to other teachers in the high school; value of courses in psychology and education to those preparing to teach music; planning work for high schools where no definite courses have been followed. Examination of books and materials.

Practice teaching and observation of classes in Oread Training School, by appointment with director of this department.

The following three courses in the School of Education and the College

are required by the State Board of Education of all candidates for the special certificate entitling the holder to teach public-school music in the grade and high schools of the state.

Courses in the College.

1a.—GENERAL PSYCHOLOGY. Three hours, first semester, at 10:30, on Monday and Wednesday, and third hour by appointment. A general study of human consciousness and behavior, with reference both to scientific theory and to practical application. The course is open to students who have taken psychology in high school, as well as to those who have not done so. It should be preceded by elementary courses in the biological and physical sciences. Hunter, Dockeray.

Courses in the School of Education.

1.—METHODS OF TEACHING. Three hours, second semester, at 10:30. This course will deal with those fundamental principles of method that will be most helpful to teachers in the organization and presentation of subject matter. The illustrative materials will be taken from a wide range of subjects, but the emphasis will be upon the problems that pertain particularly to the elementary schools. Nutt.

2.—ELEMENTARY EDUCATION. Three hours, second semester, at 8:30. The elementary school and its problems are considered in the light of the historical development, characteristic tendencies, position in the educational system, organization, relation to the community, and course of study. Among the topics discussed are: compulsory education; reorganization of the curriculum; length of period for elementary education; vacation schools; playgrounds and physical education; standard tests; progression through the grades; systems of promotion: special classes; and rural education. Kelly.

VIOLIN.

Professor: KENDRIE.

1 and 2.—KREUTZER'S FORTY STUDIES. Scale Studies by Alard or Schradieck. Selections from Sevcik's Four Thousand Bow Studies. Solos by Singelee, Alard, Leonard, Bohm, Daube, and others. Duets by Mazas and Dancla. Concertos by Rode and De Beriot.

3 and 4.—KREUTZER'S FORTY STUDIES. Fiorillo's Thirty-six Studies. Scale Studies by Alard or Schradieck. Selections from Sevcik's Four Thousand Bow Studies. Sonatas, concertos, selections from compositions of Bach, Handel, Beethoven, De Beriot, Ernst, Vieuxtemps, Viotti, Wieniawski, Brahms, Leonard, Sarasate, Hubay, and Kreisler. Ensemble playing.

5 and 6.—KREUTZER'S FORTY STUDIES. Fiorillo's Thirty-six Studies. Selections from Sevcik's Technic Studies. Sonatas of Bach, Handel, Beethoven, Rubinstein, Franck, Grieg, and Sjogren. Selections for compositions of Wieniawski, Leonard, Hubay, Sarasate, Bazzini, Saint-Saëns, Vieuxtemps, Zarzycki, Natchez, Shubert, Schumann, and Chopin. Violin duets. Standard concertos. Ensemble playing.

7 and 8.—FIORILLO'S THIRTY-SIX STUDIES. Rode's Twenty-four Studies. Selections from Sevcik's Technic Studies. Sonatas for violin alone by Bach. Compositions of Handel, Tartini, Ernst, Paganini, Wieniawski, Vieuxtemps, and others. Standard concertos. Selections from compositions of American composers, including study of trios, quartets, and orchestral compositions. Other ensemble work.

VOCAL CULTURE.

Dean: BUTLER.*Professor:* DOWNING.*Associate Professor:* FARRELL.*Instructors:* OLCOTT, REYNOLDS.

1 and 2.—TONE PLACING AND BREATH CONTROL. Dictation exercises for the special needs of the individual voice. Sustained tones. Breath control and the true legato. The study of conditions necessary for the poising of the voice. The Italian vowels. Technical exercises selected from Marchesi, Lamperti, Sieber, Abt, Panofka, Garcia, and Shakspeare. Simple English and Italian songs. Freshman, twice a week throughout the year, by appointment.

3 and 4.—VOICE EXTENSION. Development of tone. Breath control. Exercises for flexibility from Lamperti, Nava, Concone, Vannini, Bordogni, Sieber, and Shakspeare. English and Italian songs. German lieder. Church solos. Sophomore, twice a week throughout the year, by appointment.

5 and 6.—STUDY OF TONE COLOR. Exercises for flexibility, continued. Embellishments. Exercises from Concone, Panofka, Marchesi, Garcia, Panseron, and Rossini. German lieder, English oratorio, and church solos. Junior, twice a week throughout the year, by appointment.

7 and 8.—STYLE AND INTERPRETATION. A comparative study. Exercises for bravura singing from Marchesi. Flexibility and finishing exercises from the masterpieces of vocalization. Stage deportment. Selections from opera and oratorio. Modern Italian, German, and French song literature. Senior, twice a week throughout the year, by appointment.

9.—VOCAL SEMINAR. An intensive study of the classic Italian song literature: Bononcini, Cavalli, Caldara, Pergolese, Paisiello, Monteverde, Scarlatti, Carissimi, Lotti, Gluck, Handel, etc. The German romantic school; Schubert, Schumann and Franz; with especial attention to correct diction and interpretation. Open to Juniors, Seniors and advanced special students. First semester. Once a week, by appointment.

Butler.

10.—VOCAL SEMINAR. A continuation of 9. Modern French, German and Russian song literature. Representative American song composers; Chadwick, Beach, Foote, Rogers, Carpenter, Nevin, Coombs, Arthur Nevin, Homer, Gilbert, Hadley, etc. Second semester. Once a week, by appointment.

Butler.

SECTION VI.
School of Law.

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FACULTY.

FRANK STRONG, Ph. D., President.

JAMES W. GREEN, A. M., Dean, and Professor of Law.

WILLIAM L. BURDICK, Ph. D., LL. B., Professor of Law.

WILLIAM E. HIGGINS,* B. S., LL. B., Professor of Law.

HENRY W. HUMBLE, A. M., J. D., Professor of Law.

EDWARD D. OSBORN, Professor of Law.

RAYMOND F. RICE, A. B., LL. B., Associate Professor of Law.

Lecturers for 1917-1918.

J. G. SLONECKER, United States Referee in Bankruptcy, Topeka.

HENRY F. MASON, Justice of the Supreme Court of Kansas.

ROUSSEAU A. BURCH, Justice of the Supreme Court of Kansas.

J. C. RUPPENTHAL, Justice of the District Court, Russell.

W. C. MICHAELS, Attorney at Law, Kansas City, Missouri.

D. A. VALENTINE, Clerk of the Supreme Court of Kansas.

THOS E. WAGSTAFF, Attorney at Law, Independence, Kansas.

EDWIN A. KRAUTHOFF, Attorney at Law, Kansas City, Missouri.

* Absent on leave, 1917-'18.

THE SCHOOL OF LAW.

PURPOSE OF THE SCHOOL.

It is the aim of the School of Law to give its students a thorough acquaintance with the general principles of American law and to furnish a course of legal instruction that shall fit them to practice at the bar of any state of the Union; also to give those who do not expect to become practicing attorneys, but who desire to pursue certain legal subjects for their bearing upon business, such instruction as may be best suited to their needs.

DEGREE GRANTED.

The course of study of the School of Law occupies three years, and leads to the degree of bachelor of laws (LL. B.).

CERTIFICATE OF ATTENDANCE.

If the student does not graduate, he may, on application to the Registrar, receive an official certificate of his attendance and of the work accomplished by him in the School.

EXAMINATIONS.

The members of each class will be examined upon each topic when completed. A final examination will be held at the end of the third year, embracing all the studies of the course.

ADMISSION TO THE BAR.

The legislature of 1903 amended the statute regulating admission to the bar, and provided for state examinations by a commission appointed by the supreme court. This act provides that applicants must be graduates of this School of Law or of an institution of equal standing, or they must have studied law for three years in a law office. The board of examiners meets at Topeka on the third Monday in January and June. Applications for examination and proof of qualifications must be filed with the secretary of the board at least three weeks before the examination. Printed forms of application may be obtained from the clerk of the supreme court, Topeka, Kansas.

All applicants must present high-school certificates or affidavits from teachers showing the completion of the following subjects, or pass examinations therein, to wit: Three years English—grammar, rhetoric, and literature; arithmetic, algebra, geometry; general history, Roman, English, and American history; civil government; the elements of physics, physical geography, botany, biology; political economy and sociology.

All candidates for admission are required to pass a written examination covering their legal qualifications. All subjects included in this examination are within the course of study of the University School of Law.

ADMISSION.

WORK IN PREPARATION FOR LAW. All persons proposing to enter upon the study of law are earnestly recommended to take first either a regular or special course in the College. A good fundamental education is necessary to a successful study of law. Especially is it necessary now when the practitioner must come into competition with men who have had a thorough university training before they entered upon the study of law.

The College offers special work in subjects of great value as preparatory to the study of law: English and American constitutional and political history, constitutional law, political science, economics, sociology, history of international and common law, rhetoric and English composition, and debating. These courses are especially recommended in preparation for law.

REQUIREMENTS FOR ADMISSION. Thirty hours credit in the College of Liberal Arts and Sciences of the University of Kansas, or its equivalent in some other university or approved college, in addition to graduation from a four-year high school, is required for entrance to the School of Law.

This credit may be proven by proper certificate of the authorities of the university or college where the work was done, or it may be obtained by examination upon application to the University of Kansas.

SPECIAL STUDENTS. Opportunity is given in the School of Law for the admission of persons of mature years who desire to pursue special work without following any prescribed course or becoming candidates for a degree.

The admission of such special students is under the control of the Dean of the School, whose certificate of acceptance must be presented to the Registrar before registration. Applicants for standing as special students must present satisfactory evidence of proper preparation for the studies desired, and must also meet other requirements as fixed by the Faculty.

Special students are subject to the same regulations as regular students with regard to the quality of work performed and attendance at recitations and examinations.

ADMISSION TO ADVANCED STANDING. Credit for work of collegiate or professional standing is granted only on recommendation of the Advanced Standing Committee. For regulations governing the granting of such credit, see "Admission to Advanced Standing," Section I, page 49.

REGISTRATION.

All candidates for admission to the Law School, and all students intending to pursue studies therein during the ensuing year, must present themselves for registration at the University on September 16, 17, or 18, 1918. *Registration at a later date will be permitted only on the payment of a fee of one dollar.*

ENROLLMENT.

After registration has been completed with the Registrar, and after fees have been paid, students should apply to the Dean for enrollment in their classes. Enrollment the first semester occurs September 17 and 18, 1918, and on the first day of the second semester. *Enrollment at a later date will be permitted only on the payment of a fee of one dollar.*

Matriculation fee, for residents of the state.....	\$5.00
for nonresidents	10.00
Incidental fee, for residents of the state.....	25.00
for nonresidents	35.00
Diploma fee, at graduation	5.00

The average price of board, rooms, light, and fuel may be placed at from \$4 to \$7 a week. Day board in private families and at city restaurants may be obtained for \$3.50 to \$5 a week. Day board in clubs varies from \$3.50 to \$4 a week. Furnished rooms, usually occupied by two students, range from \$4 to \$15 a month. Unfurnished rooms rent for \$1.50 to \$3 a month. Students who can supply their own furniture and buy and prepare provisions for the table themselves can lessen expenses materially.

See, also, "Prizes and Aids." General Section, p. 54.

KENT CLUB. The members of the Kent Club are, in the main, members of the Senior class, although any student in the school of Law is eligible to membership. The work consists of the discussion of legal, economic, and historical questions, and the consideration of legal literature. Debating is a prominent feature of the work of the club.

DEBATING. Interstate debates are held each year with Oklahoma, Missouri, and Colorado state universities. Members of the Law School are admitted to the preliminary contest held for the purpose of choosing representatives on each of these debates. Those chosen receive practical instruction in public speaking and debating from a committee of the general Faculty of the University. Law students are also eligible to membership in the general literary clubs of the University.

GREEN HALL. A building for the School of Law was completed during the summer of 1905, at a cost of \$65,000, and is one of the most complete and best-equipped law buildings in the west. It has three floors, devoted to recitation rooms, offices, library, and rooms for the Law School clubs. The library contains space for about 20,000 volumes, and private study rooms for students and Faculty open into the reading room of the library. A large room is set aside for a practice court, and the best facilities possible are available for students of the law.

LIBRARIES. The law library, composed of 8,625 volumes, is for the exclusive use of the students of the School of Law. The library has an

excellent equipment of the best law textbooks, and new texts are being added constantly. It has also reports of the courts of last resort, both state and federal, as well as *Lawyers' Reports Annotated*, *American Decisions*, *American Reports*, the complete *Reporter* system, and the full reprints of the English cases. Limited space has prevented as rapid growth of the library as desired, and in the new building large additions will be made to the Library equipment. In addition to the volumes devoted exclusively to law, the University library of 107,262 volumes is at the disposal of the law students. They thus have at hand the largest and best-selected scholarly library in the Southwest. The city library, housed in the Carnegie building, is also open to students of the School of Law for books of fiction and general literature.

STATE LIBRARY. The state library, at Topeka, which is largely a law library, is easily accessible to students upon necessary occasions. Such works as may be found usually in large state libraries will therefore be at the disposal of the members of the Law School at various times during the year.

COLLEGE AND SCHOOL OF LAW IN SIX YEARS.

A regular course in the College is strongly recommended. During his Senior year of the College a student is permitted to elect one half-year's work from the course in the School of Law, for which he will receive credit in his college course. By this arrangement, the student, by reasonable extra work, may finish both the College and the School of Law in six years.

COURSES OF LAW IN THE SUMMER SESSION.

A Summer Session of the Law School is held each year, beginning immediately upon the close of the regular session and lasting six weeks. The class periods during the Summer Session are one and one-half hours, thus giving the same amount of class instruction as is given to the topics taught in the regular sessions. The topics taught in the Summer Session are: Criminal Law, Agency, Torts, Insurance, Partnership, Wills, or Negotiable Instruments. Any person taking work in a Summer Session may select any two of the subjects given.

For further details, see Summer Session Section of Catalog, under "Law"; and "Description of Courses," in this section.

SYSTEM OF INSTRUCTION.

It is believed to be proved by experience that, to be thoroughly efficient, instructional training in law courses must be given by resident teachers who give their whole time to instruction. The work of the School of Law is under the direction of five resident instructors, supplemented by lectures on special topics by competent men in the actual practice of law.

METHOD OF TEACHING.

There are in general three methods of class instruction in law—by lectures, by textbooks, and by cases. The School of Law at the University does not pursue any method to the entire exclusion of the others. It uses the textbook method very largely for the beginning classes, and makes use of the lecture and case methods more largely as classes advanced in the course.

The student is given large opportunity for free discussion of the topics in question, and is brought as much as possible into personal touch with his instructor.

PRACTICE COURTS.

There are three practice courts in the School of Law, all of them under the immediate supervision of the member of the Faculty who devotes the major part of his time to this work. The sessions are held in the court room, which has been fitted with all of the furniture to be found in court rooms in actual practice. Ample accommodations are furnished for judge, jury, and practitioners.

THE FIRST-YEAR PRACTICE COURT.

In the first year, preliminary instruction is first given in the analysis of opinions, and in the preparation of cases for argument. Following this preliminary instruction, court is held under the direction of the member of the Faculty in charge. The places of attorneys, clerk, and other court officers are filled in rotation by members of the class. Cases involving statements of facts are assigned. Written briefs are required to be presented, served upon the opposing attorneys, and submitted to a court composed of two members of the class and the members of the Faculty. Written opinions containing full discussion of the legal questions presented are required to be handed down by the student justices.

THE SECOND-YEAR PRACTICE COURT.

The aim of the course of the second year is to instruct in the preparation of cases before and after they are filed in court. To this end, statements of fact are given to the members of the class, in accordance with which trial briefs of the law and of the facts are made, and pleadings under the common law, equity and code systems of civil procedure are drawn. Each member of the class receives from the instructor in charge criticism of the work done. The code practice of the court follows closely the practice in the district courts of Kansas. Besides this work, a course of lectures is given on instructions to juries and findings of fact. Members of the class are required to draw journal entries, instructions, and findings, under direction of the instructor in charge of the course.

THE THIRD-YEAR PRACTICE COURT.

The work of the third year is a continuation of the work of the preceding two years. The student is taught how to begin and prosecute a case in court. The former difficulty of originating facts in practice courts has been overcome, and all the testimony of complicated cases is placed in the hands of witnesses, who are interviewed by the attorneys assigned. The cases are then begun, prosecuted and determined as in actual practice. Juries are drawn and impaneled, the evidence produced, instructions given, verdicts and judgments rendered as in the justice of the peace courts and in the district courts of Kansas. Following this, appeals are prosecuted in due course to the supreme court, where briefs are filed and arguments made as in the supreme court of Kansas.

Only four attorneys are assigned to each case, and there are enough cases for all members of the class to act as trial attorneys and as attorney in the appellate court. Every member of the Senior class is thus given an opportunity to conduct a case as in actual practice.

Instruction is also given in legal ethics and in office practice.

For members of the courts a series of lectures on practical topics is arranged for the second term of each year.

CURRICULUM.

SCHEDULE OF COURSES.

KEY: (B.) Professor Burdick. (G.) Dean Green. (Hu.) Professor Humble. (O.) Professor Osborn. (R.) Professor Rice.

FIRST YEAR

		<i>Time.</i>	<i>Hrs.</i>			<i>Time.</i>	<i>Hrs.</i>
FIRST QUARTER.				SECOND QUARTER.			
Contracts (G.)	9:00	5		Contracts (G.)	9:00	5	
Criminal Law (B.)	10:00	5		Agency (Hu.)	10:00	5	
Elementary Law (Hu.)	11:00	5		Torts, Tu. Th. (O.)	11:00	2	
Court, F. (R.)	1:00	—		Court, F. (R.)	1:00	—	
THIRD QUARTER.				FOURTH QUARTER.			
Torts, M. W. Th. (O.)	9:00	3		Suretyship (O.)	9:00	5	
Sales (B.)	10:00	5		Damages (Hu.)	10:00	5	
Bailments (O.)	11:00	5		Domestic Relations (B.)	11:00	5	
Court, F. (R.)	1:00	—		Court, F. (R.)	1:00	—	

SECOND YEAR

		<i>Time.</i>	<i>Hrs.</i>			<i>Time.</i>	<i>Hrs.</i>
FIRST QUARTER.				SECOND QUARTER.			
Common-law Pleading (R.)	8:00	5		Equity Pleading (R.)	8:00	5	
Insurance (Hu.)	9:00	5		Quasi Contracts (B.)	10:00	5	
Equity, M. W. F. (O.)	11:00	3		Equity, M. W. F. (O.)	11:00	3	
Court, M. W. (R.)	1:00	—		Court, M. W. (R.)	1:00	—	
THIRD QUARTER.				FOURTH QUARTER.			
Bills and Notes, M. W. F. (Hu.)	8:00	3		Bills and Notes, M. W. F. (Hu.)	8:00	3	
Trusts, Tu. Th. (Hu.)	8:00	2		Trusts, Tu. Th. (Hu.)	8:00	2	
Evidence (G.)	9:00	5		Evidence (G.)	9:00	5	
Code Pleading (R.)	10:00	5		Conflict of Laws (O.)	10:00	5	
Court, M. W. (R.)	1:00	—		Court, M. W. (R.)	1:00	—	

THIRD YEAR

		<i>Time.</i>	<i>Hrs.</i>			<i>Time.</i>	<i>Hrs.</i>
FIRST QUARTER.				SECOND QUARTER.			
Real Property (B.)	9:00	4		Real Property (B.)	9:00	4	
Roman Law (B.)	9:00	1		Roman Law (B.)	9:00	1	
Corporations (O.)	10:00	5		Corporations (O.)	10:00	5	
Court, Tu. Th. (R.)	1:00	—		Bankruptcy, Tu. Th. (Hu.)	11:00	2	
THIRD QUARTER.				Court, Tu. Th. (R.)	1:00	—	
Real Property (B.)	9:00	4		FOURTH QUARTER.			
Roman Law (B.)	9:00	1		Wills (B.)	10:00	5	
Partnership (Hu.)	10:00	5		Constitutional Law (G.)	11:00	5	
Constitutional Law (G.)	11:00	5		Court, Tu. Th. (R.)	—	—	
Court, Tu. Th. (R.)	—	—					

DESCRIPTION OF COURSES.

FIRST-YEAR COURSES.

1.—ELEMENTARY LAW. First semester, first half, daily, at 11. An analytical study of the elements of jurisprudence; a historical examination of the systems of English and American common law and equity; an exemplification of common-law theories in the law of trespass; conversion. Pound's History and System of Common Law. Humble.

2.—CRIMINAL LAW. First semester, first half, daily, at 10. Common-law and statutory offenses; parties in crime; classification and elements of the specific offenses; criminal procedure; jurisdiction, arrest, extradition, examination and bail, indictment, trial, evidence, proceedings after verdict, error, appeal. Clark and Marshall on Criminal Law; lectures; selected cases; drawing indictments. Burdick.

3.—CONTRACTS. First semester, daily, at 9. The formation of contracts; offer and acceptance; form and consideration; capacity of parties; reality of consent; legality of objects; operation of contracts; limits of contractual obligations; assignment of contracts; discharge of contracts, by agreement, by performance, by breach, by operation of law. Clark, Benjamin, and Messing's Cases. Green.

4.—AGENCY. First semester, second half, daily, at 10. Creation and termination of relation; evidence of appointment; ratification; construction of authorizations; execution of authority; right, duties, and liabilities of principal, agent, and third party *inter se*; particular classes of agents. Mechem's Outline and Cases on Agency. Humble.

5.—TORTS. First semester, second half, Tu. Th., at 11; second semester, first half, M. W. F., at 9:30. General principles of liability in tort; intent and negligence; proximate cause; active misconduct and tortious omissions; liabilities of persons occupying certain relations; deceit; defamation; justification and excuse; contributory negligence. Bohlen's Cases on Tort. Osborn.

6.—SALES. First semester, second half, daily, at 10. Sales distinguished from kindred contracts; formation of the contract; effects of the contract; avoidance of the contract; performance of the contract; rights of unpaid seller against the goods, including lien and stoppage *in transitu*; remedies upon breach of the contract. Burdick's (W. L.) Cases on Sales. Burdick.

7.—BAILMENTS AND CARRIERS. Second semester, first half, daily, at 11. Bailments; carriers of goods; carriers of passengers; duty to serve; liability of carriers for loss or injury, for delay, for misdelivery; limitation of liability; tickets and bills of lading; freight; connecting carriers. Green's cases on Carriers. Osborn.

8.—SURETYSHIP. Second semester, second half, daily, at 9. Forms of suretyship; essentials of the contract; statute of frauds; exoneration; reimbursement; subrogation; contribution; defenses and discharge of surety. Hening's Cases on Suretyship. Osborn.

9.—DAMAGES. Second semester, second half, daily, at 10. *Damnum absque injuria*; nominal damages; liquidation of damages; aggravation and mitigation; exemplary damages; compensatory damages; nonpecuniary losses; damages in specific actions. Mechem and Gilbert's Cases. Sedwick's Text. Humble.

10.—DOMESTIC RELATIONS, OR FAMILY LAW. Second semester, second half, daily, at 11. Husband and wife; marriage; effect of marriage;

statutory modifications of the common law; the wife's separate property; Community property; separation and divorce. Parent and child; parental rights and duties; filial duties. Guardian and ward: common-law, chancery, and statutory guardians; rights and duties of guardians; management and sale of the ward's property; guardian's accounts. Infants: general principles governing the contracts, torts, crimes, and general juristic capacity of minors. Master and servant; general principles. Lectures: Woodruff's Cases. Burdick.

11.—PRACTICE COURT. First and second semesters, F., at 1. (For synopsis see *supra* in this announcement.) Rice.

SECOND-YEAR COURSES.

12.—COMMON-LAW PLEADING. First semester, first half, daily, at 8. The development of courts and of systems of pleading; an analytical and historical study of remedies at common law, including ancient modes of trial; forms of actions; parties to actions; order of proceeding; pleadings; production of issue; forms of traverse; demurrers; materiality, unity and certainty in pleading. Case book. Rice.

13.—INSURANCE. First semester, first half, daily, at 9. The theory of insurance with reference to fire, marine, accident, and life risks; the legal relation of the parties to the insurance contract examined historically and critically, with a view to developing the fundamental principles of the contract and the law merchant underlying it; interpretation and construction of the standard policies. Wambaugh's Cases; Humble's Text. Humble.

14.—EQUITY. First semester, M. W. F., at 11. Nature of equity jurisdiction; specific performance of contracts; relief for and against third persons; incidents of the right to specific performance; bills for an account; relief against torts; bills of interpleader; bills *quia timet*; reformation and rescission for mistake. Ames' Cases on Equity Jurisdiction. Osborn.

15.—EQUITY PLEADING. First semester, second half, daily, at 8. Equity courts; parties; bills; multifariousness and impertinence; nature and office of demurrers, pleas, answers and replications; decrees; petitions for rehearing and bills of review; modifications by the new federal equity rules. Cases on Equity Pleadings, and the New Federal Equity Rules. Rice.

16.—QUASI CONTRACTS. First semester, second half, daily, at 10. Origin and nature of quasi contracts; distinguished from contracts and tort; right of recovery upon a record; right of recovery upon a statutory, official or customary duty; right of recovery upon unjust enrichment; general principles governing unjust enrichment, including money paid under mistake, constraint, duress, or compulsion. Woodruff's Cases on Quasi Contracts. Burdick.

17.—BILLS AND NOTES. Second semester, M. W. F., at 8. The law merchant; delivery; form and requisites; maker's contract; acceptor's contract certified paper; drawer's contract; indorser's contract; presentment and demand; notice; protest; accommodation parties; right of holder; defenses; payment. Bigelow's Cases on Bills, Notes, and Cheques. Humble.

18.—TRUSTS. Second semester, Tu. Th., at 8. Trusts distinguished from other legal relationships; language necessary to create; consideration; statute of frauds; subject matter of trusts; nature of *cestui's* interest; transfer of trust *res*; extinguishment; duties of trustee. Ames' Cases on Trust (2d ed.). Humble.

19.—EVIDENCE. Second semester, daily, at 10. The nature and principles of evidence; the rules which govern the production of testi-

mony; instruments of evidence. Hughes on Evidence; Wigmore's Cases. Green.

20.—CODE PLEADING. Second semester, first half, daily, at 10. Its relation to the common-law and equity systems; parties; splitting and joinder of causes of action; general rules of pleading; contents of complaint or petition, answer, and reply; nature and office of demurrers, motions, and bills of particulars; amendments; construction of pleadings. Sunderland's Cases. Rice.

21.—CONFLICT OF LAWS. Second semester, second half, daily, at 10. General rules; domicile; capacity; property; obligations; family law; inheritance; foreign administration. Beal's Cases on Conflict of Laws. Osborn.

22.—PRACTICE COURT. First and second semester, M. W., at 1. (For synopsis see *supra* in this announcement.) Rice.

THIRD-YEAR COURSES.

23.—REAL PROPERTY. First semester, M. W. Th., at 9; second semester, first half. Nature of real property and tenure thereof; feudal land law. Rights in real property; estates; law of landlord and tenant. Liens upon real property. Acquisition and transfer of real property title in general; powers; deeds and their requisites; abstracts of title. Burdick's Text and Cases on Real Property; practice in conveyancing; examination of abstracts of title. Burdick.

24.—ROMAN LAW. First semester, F., at 9; second semester, first half. History and sources; the Twelve Tables; codification; law of persons; law of things; law of actions; criminal law of Rome; modern development of Roman law into the civil law of Europe and America. Institutes of Justinian; Howe's Studies in the Civil Law; lectures. Burdick.

25.—CORPORATIONS. First semester, daily, at 10. Legal conception of a corporation; corporations *de jure* and *de facto*; corporate powers; *ultra vires* acts; subscriptions to stock; directors; stockholders; creditors promoters; dissolution. Canfield and Wormser's Cases on Private Corporations. Osborn.

26.—BANKRUPTCY. First semester, second half, Tu. Th., at 11. Jurisdiction; who may be bankrupts; petitioning creditors; acts of bankruptcy; property which passes to trustee; provable claims; duties of bankrupt and trustee; protection, exemptions, and discharge of bankrupt. Williston's Cases on Bankruptcy. Humble.

27.—PARTNERSHIP. Second semester, first half, daily, at 10. Formation of a partnership; partnership as to third persons; nature of a partnership; power of partners; rights and remedies of creditors; duties and liabilities of partners; dissolution of partnership; accounting and distribution; limited partnerships. Gilmore's Cases on Partnership. Humble.

28.—CONSTITUTIONAL LAW. Second semester, daily, at 11. General principles governing the federal and state constitutions; construction and interpretation; taxation; police power; eminent domain; civil rights; constitutional guaranties; respective powers of state and federal governments in the regulation of commerce; laws impairing the obligation of contracts; *ex post facto* laws and retroactive laws. Hall's Cases. Green.

29.—WILLS. Second semester, second half, daily, at 10. History and form; capacity to make a will; effect of mistake; fraud, undue influence; execution; revocation; rules of construction; legacies; probate of wills; duties of executors. Gardner on Wills; selected cases. Burdick.

30.—PRACTICE COURT. First and second semesters, Tu. Th., at 1. (For synopsis see *supra* in this announcement.) Rice.

COURSE FOR MINING ENGINEERING STUDENTS.

MINING LAW. A course outlining the laws relating to the mining industries. Lectures and recitation, one hour per week, second semester, in alternate years. (Given in 1917-'18.) Costigan's Cases on Mining Law. Mining engineering students must take this course before graduating.

Humble.

SECTION VII.
School of Pharmacy.

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FACULTY.

- FRANK STRONG, Ph. D., President.
LUCIUS E. SAYRE, Ph. M., Dean, and Professor of Pharmacy and Materia Medica.
EDGAR H. S. BAILEY, Ph. D., Professor of Chemistry.
ERASMUS HAWORTH, Ph. D., Professor of Geology and Mineralogy.
WILLIAM C. STEVENS, M. S., Professor of Botany.
EUGENIE GALLOO, A. M., Professor of Romance Languages and Literatures.
L. D. HAVENHILL, Ph. M., Secretary, and Professor of Pharmacy and Pharmaceutical Chemistry.
FREDERICK E. KESTER, Ph. D., Professor of Physics.
HAMILTON P. CADY, Ph. D., Professor of Chemistry.
JOHN SUNDWALL, M. D., Professor of Anatomy.
FREDERICK H. BILLINGS,* Ph. D., Professor of Bacteriology.
FRANK B. DAINS, Ph. D., Professor of Chemistry.
ELMER F. ENGLE, A. M., Professor of German.
JOHN N. VAN DER VRIES,* Ph. D., Professor of Mathematics.
WILLIAM A. WHITAKER,* Ph. D., Professor of Metallurgy.
GEORGE E. COGHILL, Ph. D., Professor of Anatomy.
OLE O. STOLAND, Ph. D., Professor of Physiology.
C. FERDINAND NELSON, Ph. D., Professor of Physiological Chemistry.
FREDERICK N. RAYMOND, A. M., Associate Professor of English.
HERMAN C. ALLEN, Ph. D., Associate Professor of Chemistry.
ULYSSES G. MITCHELL, Ph. D., Associate Professor of Mathematics.
CHARLES M. STERLING, A. B., Assistant Professor of Pharmacognosy.
GEORGE N. WATSON, B. S., Assistant Professor of Pharmacy, in charge of Drug Laboratory.
CLIFFORD C. YOUNG, A. B., Assistant Professor of Chemistry and Director of State Water Survey.
PAUL V. FARAGHER, Ph. D., Assistant Professor of Chemistry.
WALTER S. LONG, A. M., Assistant Professor of Chemistry, in charge of Food Laboratory.
GEORGE W. STRATTON, Ph. D., Assistant Professor of Chemistry.
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ADMINISTRATIVE COMMITTEE.

L. E. SAYRE, *Chairman.*

L. D. HAVENHILL.

CHAS. M. STERLING

* Absent on leave.

THE SCHOOL OF PHARMACY.

PURPOSE AND ORGANIZATION.

The School of Pharmacy of the University of Kansas was established by legislative enactment in 1885. The purpose of the school is to give instruction and practical training in all branches connected with the science and art of pharmacy.

The three general divisions of instruction embrace pharmacy, theoretical and practical; chemistry, general and analytical, the latter including pharmaceutical chemistry; and materia medica, including its subdivisions of botany (systematic and histologic), pharmacognosy (macroscopic and microscopic), therapeutics, and toxicology.

DEGREES.

The School offers three curricula of two, three, and four years, leading, respectively, to the following degrees: Graduate in Pharmacy; Pharmaceutical Chemist; Bachelor of Science.

ADMISSION.

There are two methods of admission to the School of Pharmacy: First, by examination; second, by certificate.

1. BY EXAMINATION. Time and place of examination for subjects required for admission to the School of Pharmacy are the same as for admission to the College. For schedules, see General Information Section, p. 48.

2. BY CERTIFICATE. Candidates for admission to the two-, three- and four-year courses must comply with the requirements for admission to the College, viz.: four years of approved high-school work, except that students of mature years who have had two or more years' drug-store experience may be allowed credit on some of the required high-school work. For details write to the Secretary of the Faculty.

Students having entrance deficiencies are required to remove them during the first year.

SPECIAL STUDENTS. Students over twenty-one years of age, not candidates for a degree, are admitted to such courses as, in the judgment of the Faculty, they can pursue with profit. It is hoped that pharmacists throughout the state who wish to increase their efficiency will avail themselves of the opportunities here offered.

ADMISSION TO ADVANCED STANDING. Credit for work of collegiate or professional standing is granted only on recommendation of the Advanced Standing Committee. For regulations governing the granting of such credit see "Admission to Advanced Standing," Section I, page 49.

REGISTRATION.

All candidates for admission having certificates from accredited schools and all students of the University intending to pursue their studies during the ensuing year must present themselves for registration at the University on September 16, 17, 18, 1918.

Registration at a later date will be permitted only on the payment of a fee of one dollar.

ENROLLMENT.

After registration has been completed with the Registrar, and after fees have been paid, students should apply to the Dean for enrollment in their classes. Enrollment the first semester occurs September 17 and 18, 1918, and on the first day of the second semester.

Enrollment at a later date will be permitted only on the payment of a fee of one dollar.

FEES AND EXPENSES.

Matriculation fee, for residents of the state.....	\$5.00
for nonresidents of the state.....	10.00
Incidental fee, for residents of the state, per year.....	25.00
for nonresidents of the state, per year.....	35.00
Diploma fee.....	5.00

In addition to the above fees students pay for the material used and the apparatus broken in the various laboratory courses. This varies with the economy of the student. It ranges from \$12 to \$15 for the first year and from \$23 to \$25 for the second year.

REGISTRATION—STATE BOARD OF PHARMACY.

Graduates of the School of Pharmacy may become registered pharmacists in Kansas without examination upon presenting to the State Board of Pharmacy satisfactory evidence of having had the following amount of practical experience in drug stores where physician's prescriptions are compounded:

Thirty months for graduates of the two-year course.

Twenty-one months for graduates of the three-year course.

Twelve months for graduates of the four-year course.

For detailed information apply to the State Board of Pharmacy.

POSITIONS FOR GRADUATES.

An adjunct to the Pharmaceutical Society has been established, of which the aim is to secure positions for graduates and clerks for employers who are graduates of the School. At present the demand for clerks is greater than the supply. Applications for positions should be placed with the Secretary of the Faculty.

EQUIPMENT.

The School of Pharmacy occupies the first two floors and basement of the east wing of the Chemistry and Pharmacy Building. The building is arranged specifically for laboratory purposes for the departments of chemistry and pharmacy.

Laboratory instruction for pharmacy students is also given in the laboratories of the following departments: Chemistry, bacteriology, botany, mineralogy, physiology, and physics.

APPARATUS. For the various practical courses offered by this School a large amount of laboratory apparatus of domestic and foreign types is supplied. The various laboratories are equipped for manufacturing purposes, so that any preparation of the United States Pharmacopœia can be made by any of the official methods; and, in addition, appliances and materials are at hand for the unofficial and extra-pharmacopœial products.

The lecture table is abundantly supplied with illustrative apparatus, so that the student may see before him the various processes in operation which may be carried on in the laboratories and at the prescription counters. Care has been taken to illustrate pharmacy in all its phases.

COLLECTIONS The pharmacy School possesses an extensive herbarium of medical plants, together with a collection of photographs representing nearly 200 species. This, in conjunction with the large herbarium of the botanical department, is available to students. Several hundred microscope slides are at hand for use with the projection lantern, showing various drugs in cross and longitudinal sections, as well as in powdered form; also a large assortment of lantern slides, illustrating plants, drugs, prescriptions, pharmacies, and places and subjects of pharmaceutical interest; several cases of crystal models; an extensive collection of official and unofficial salts, alkaloids, drugs and medicines, besides numerous smaller collections of particular interest.

LIBRARY. The School possesses an extensive library, and is the regular recipient of the leading pharmaceutical journals and periodicals of America, England, Germany, and France.

For the convenience of students in chemistry and pharmacy a branch library is provided in the building and adjacent to the chemical and pharmaceutical laboratories, where the principal reference books and periodicals may be found.

THE CURRICULUM.

Three definite curricula are provided:

THE TWO-YEAR CURRICULUM is confined to pharmaceutical work and is designed to meet the requirements of those students who have had one or more years of experience in a drug store and who wish to further qualify themselves for the work of the retail pharmacy.

THE THREE-YEAR CURRICULUM is especially recommended to those students who have had no drug-store experience, and to those who desire a broader course of training than that afforded by the two-year course. Special opportunities are offered in this course for work in the field of drug standardization and analysis.

THE FOUR-YEAR CURRICULUM prepares the student for graduate work. It is especially recommended to all who aim to be food and drug analysts, municipal chemists, biological chemists, sugar chemists, etc.; and allows a liberal choice of electives in the physical, chemical, and biological groups.

Connected with the School of Pharmacy is the state laboratory for drug analysis, which affords unusual opportunities for those who are especially interested in governmental and state positions.

Choice of Electives should be tentatively made and submitted to the Faculty by the beginning of the Junior year.

Requirements for Graduation. Students desiring to graduate from the four-year curriculum are required to be in residence and regularly registered in the School of Pharmacy during their Senior year, and to have completed the prescribed courses of study with a minimum of 130 hours total credit, including electives, and with grade of A, B, or C in at least 85 hours.

TWO-YEAR SCHEDULE.

FIRST YEAR.

<i>Course.</i>	FIRST SEMESTER.	<i>Time.</i>	<i>Hours credit.†</i>
Introductory Pharmacy	9:00-10:00, Tu., Th.	.....	2
Pharmaceutical Arithmetic	9:00-10:00, M., W., F.	.....	3
Pharmaceutical Botany	10:00-12:00	.....	5
Elementary Chemistry*	1:00- 3:00	.....	5
SECOND SEMESTER.			
Pharmacognosy	8:00-10:00	.....	5
Official Pharmacy	11:00-12:00, Tu., Th.	.....	2
Inorganic Medicinal Chemicals.....	11:00-12:00, M., W., F.	.....	3
Qualitative Analysis	1:00- 3:00	.....	5

SECOND YEAR.

FIRST SEMESTER.			
Pharmaceutical Chemistry	8:00-10:00, Tu., Th.	.....	2
Quantitative Analysis	9:00-11:00, M., W., F.	.....	3
Materia Medica I	11:00-12:00, M., Tu., Th.	.....	3
Manufacturing Pharmacy	1:00- 4:00	.....	8
SECOND SEMESTER.			
Prescription Practice	8:00-10:00 (a)	.....	2
Physiology and Pharmacology.....	8:00-10:00 (b)	.....	3
Materia Medica and Pharmacology II.....	11:00-12:00, M., Tu., W., Th.,	.....	4
Toxicology	9:00-10:00, F.	.....	1
Drug Store Management.....	10:00-11:00, W.	.....	1
General Review of Pharmacy.....	10:00-11:00, Tu., Th.	.....	2
Organic Chemistry	1:00- 3:00	.....	5

* Students presenting chemistry for entrance are required to elect, in place of Chemistry I, 5 hours from the physical science group. Chemistry II is recommended.

† CREDIT HOUR. A credit hour requires, for a student of average ability, fifty minutes in lecture or recitation and two hours in preparation, or one hour and fifty minutes in laboratory and one hour in preparation, or two hours and fifty minutes of straight laboratory work not requiring outside preparation, per week for one semester.

THREE-YEAR SCHEDULE.

FIRST YEAR.

FIRST SEMESTER.

<i>Course.</i>	<i>Time.</i>	<i>Hours credit.</i>
Rhetoric I	8:00- 9:00, M., W., F.	3
Introductory Pharmacy	9:00-10:00, Tu., Th.	2
Pharmaceutical Botany	10:00-12:00	5
Elementary Chemistry*	1:00- 3:00	5

SECOND SEMESTER.

Pharmacognosy	8:00-10:00	5
Rhetoric II	8:00- 9:00, Tu., Th.	2
Inorganic Medicinal Salts	11:00-12:00, M., W., F.	3
Qualitative Analysis	1:00- 3:00	5

SECOND YEAR.

FIRST SEMESTER.

Pharmaceutical Chemistry	8:00-10:00, Tu., Th.	2
Pharmaceutical Arithmetic	9:00-10:00, M., W., F.	3
Quantitative Analysis	10:00-12:00, M., W., F.	3
Bacteriology	1:00- 3:00	5
German I	3:00- 4:00	5

SECOND SEMESTER.

Elective†	8:00-10:00	5
Official Pharmacy	11:00-12:00, Tu., Th.	2
German II	11:00-12:00	5
Organic Chemistry	1:00- 3:00	5

THIRD YEAR.

FIRST SEMESTER.

Microanalysis of Drugs and Spices	8:00-10:00	5
Materia Medica	11:00-12:00, M., Tu., Th.	3
Manufacturing Pharmacy	1:00- 4:00	8

SECOND SEMESTER.

Prescription Practice (a)	8:00-10:00	2
Physiology (b)	8:00-10:00	3
Materia Medica	11:00-12:00, M., Tu., W., Th.,	4
Toxicology	9:00-10:00, F.	1
Drug Store Management	10:00-11:00, W.	1
General Review	10:00-11:00, Tu., Th.	2
Elective†	1:00- 3:00	5

FOUR-YEAR SCHEDULE.

FRESHMAN YEAR.

FIRST SEMESTER.

<i>Course.</i>	<i>Time.</i>	<i>Hours credit.</i>
Introductory Pharmacy	9:00, Tu., Th.	2
Rhetoric I	9:00, M., W., F.	3
Pharmaceutical Botany	10:00-12:00	5
Elementary Chemistry*	1:00- 3:00	5

SECOND SEMESTER.

German I or French I	8:00	5
Rhetoric 2	9:00, Tu., Th.	2
Official Pharmacy	11:00, Tu., Th.	2
Mathematics 2	10:00, M., W., F.	3
Qualitative Analysis	1:00- 3:00	5

SOPHOMORE YEAR.

FIRST SEMESTER.

German 2 or French 2	8:00	5
Pharmaceutical Arithmetic	9:00, M., W., F.	3
Mathematics 3	9:00, Tu., Th.	2
Quantitative Analysis	10:00-12:00	5

* Students presenting chemistry for entrance are required to elect, in place of Chemistry I, 5 hours from the physical science group. Chemistry II is recommended.

† In the choice of electives the student is required to confer with his faculty adviser.

<i>Course.</i>		<i>Time.</i>	<i>Hours credit.</i>
SECOND SEMESTER.			
Pharmacognosy	8:00-10:00		5
Inorganic Medicinal Chemicals.....	11:00-12:00, M., W., F.....		3
Organic Chemistry	1:00- 3:00		5
Elective†‡			5
JUNIOR YEAR.			
FIRST SEMESTER.			
Elective†‡			5
German 3 or French 3.....	9:00		5
Materia Medica I.....	11:00-12:00, M., W., Th.		3
Bacteriology I	1:00- 3:00		5
SECOND SEMESTER.			
Elective†‡			5
Organic Materia Medica and Pharmacology II.....	11:00, M., Tu., W., Th.		4
Toxicology	9:00, F.		1
Physics 5 (b).....	1:00- 3:00, Tu., Th.		2
Physics 5 (a).....	2:00, M., W., F.		3
SENIOR YEAR.			
FIRST SEMESTER.			
Elective‡			10
Thesis	10:00		
Manufacturing Pharmacy	1:00- 4:00		8
SECOND SEMESTER.			
Prescription Practice (a).....	8:00-10:00		2
Elective*			7
Biological Chemistry	8:00-12:00, M., W., F.....		4 or 6
Completion of Thesis.....			

* Students presenting chemistry for entrance are required to elect, in place of Chemistry I, 5 hours from the physical science group. Chemistry II is recommended.

† In the choice of electives the student is required to confer with his faculty adviser.

‡ A student may not elect more than eighteen hours in each semester without special permission from the Faculty. Choice of electives should be tentatively made and submitted to the Faculty by the beginning of the Junior year.

DESCRIPTION OF COURSES.*

ANATOMY.

Professors: SUNDWALL, COGHILL.

M7.—HISTOLOGY AND SPLANCHNOLOGY. Five hours credit.
Coghill and assistants.

BACTERIOLOGY.

Professor: BILLINGS.†

Associate Professor: SHERWOOD.

Instructors: TREECE, DOWNS.

50.—GENERAL BACTERIOLOGY. Five hours credit. Both semesters; first semester, two sections, 10 to 12, and 1 to 3; second semester, 8 to 10, and 10 to 12. Lectures and laboratory work. The lectures are largely illustrated, and treat problems connected with general bacteriology and with the relation of bacteria to public health. The laboratory work deals with the preparation of media, with cultural methods, and with diagnostic tests. Prerequisite, chemistry 1, or equivalent. Fee, \$5.
Sherwood, Treece, Downs.

53.—BACTERIOLOGY OF FOODS. Five hours credit. Second semester, 1 to 3. Examination of milk, oysters, meats, etc. Reviews of literature pertaining to food bacteriology. Prerequisite, course 50. Fee, \$5.
Treece.

54.—SPECIAL METHODS IN BACTERIOLOGY. Five hours credit. First semester, 10 to 12. The laboratory work embraces the use of special media, the preparation of vaccines, and diagnostic technic such as that used in a public-health laboratory. Methods in sanitary water analysis constitute a part of the course. Prerequisite, course 50. Fee \$5.
Sherwood, Downs.

55.—BACTERIOLOGY OF SOILS. Two hours credit. Second semester, 1 to 3. A laboratory study of the influence exerted by bacteria on the composition of soil. (Offered 1919-'20.)
Treece.

57.—IMMUNITY. Five hours credit. Second semester, 1:30 to 3:30. Laboratory work comprises a study of precipitins, agglutinins, bacteriolyins, antitoxins, anaphylaxis, and complement fixation. Prerequisite, course 50. Fee, \$5.
Sherwood, Downs.

58.—PATHOGENESIS. Five hours credit. First semester, 8 to 10. A detailed study of lesions caused by bacteria. Prerequisites, course 50 and animal histology. Offered in 1919-'20. Fee, \$5. Sherwood.

61.—SPECIAL PROBLEMS IN BACTERIOLOGY. Two to ten hours credit. Either semester, by appointment. Special work along some definite line,

* C., E., or M., before the number of the course indicates that it is offered by the College, School of Engineering, or School of Medicine, respectively.

Courses numbered from 1 to 49 are Freshman and Sophomore courses; from 50 to 99 are Junior and Senior courses; from 100 to 149 are offered only in the Graduate School; from 150 to 200 are Junior and Senior as well as Graduate courses.

DAYS OF MEETING. Courses giving five hours credit meet daily from Monday to Friday, inclusive.

Courses giving three hours credit meet on Monday, Wednesday, and Friday, unless otherwise specified.

Courses giving two hours credit meet on Tuesday and Thursday, unless otherwise specified.

† Absent on leave.

with a view to obtaining familiarity with a particular kind of laboratory procedure. Prerequisite, course 50. Fee, \$1, for each hour of enrollment. Sherwood and the instructor directly concerned.

BIOCHEMISTRY.

Professor: NELSON.

Instructor: ———.

50.—**BIOLOGICAL CHEMISTRY.** Four or six hours credit. Second semester, M. W. F., 8 to 12. A course embracing a fundamental study of the chemistry of epithelial, connective, muscular, and nervous tissues. A study of enzymes and enzyme action, proteins, fats and carbohydrates. The qualitative and quantitative composition of milk, saliva, blood, bile, peptic and pancreatic juices. Designed to meet the needs of pharmacists and those pursuing courses in food analysis, hygiene, and home economics. Required in the four-year pharmacy course. Open as elective for others having necessary prerequisites. Nelson.

52.—**URINALYSIS.** Two hours credit. Elective. Second semester, hours by appointment. The qualitative and quantitative examination of normal and pathological urine. Nelson.

51.—**ADVANCED BIOLOGICAL CHEMISTRY.** Two or more hours credit. Throughout the year. Conferences and reports on selected topics. Nelson.

53.—**COLLOID CHEMISTRY.** Two hours credit. First semester. A study of colloids and the colloidal state of matter. Special emphasis is laid on the applications of colloid chemistry to problems in biochemistry. Nelson.

101.—**RESEARCH IN BIOLOGICAL CHEMISTRY.** Two or more hours credit. Throughout the year. Nelson.

102.—**BIOCHEMICAL SEMINAR.** Weekly meetings. Prerequisites, a reading knowledge of French and German. Discussion and reports on current biochemical literature. Nelson.

BOTANY AND PHARMACOGNOSY.

Professors: SAYRE, STEVENS.*

Assistant Professor: STERLING.

1.—**PLANT HISTOLOGY AND GENERAL MORPHOLOGY.** Five hours credit. First semester, 10 to 12. A study of plant tissues, histological technique; the general forms of the flowering plants, and the preparation and preservation of specimens. Laboratory work, lectures, and recitations. Sterling.

2.—**PHARMACOGNOSY.** Five hours credit. Second semester; M. W. F., 8 to 10; Tu. Th., 9 to 10. An introduction to taxonomy; a study of the geographical distribution, origin and physical characteristics of crude vegetable drugs, and elementary technique in the examination of powdered drugs. Laboratory work, lectures, and recitations. Prerequisite, course 1 or course 6. Sterling.

51.—**MICROANALYSIS OF POWDERED DRUGS AND FOODS.** Five hours credit. First semester, 8 to 10. Methods in sectioning and staining, the preparation of powders, and microscopical examination. Laboratory work, lectures, and recitations. Prerequisite, course 2.

52.—**ADVANCED WORK IN MICROANALYSIS OF DRUGS AND FOODS.** Two, three, or five hours credit. First or second semester, by appointment. A course designed to meet the needs of students preparing to be drug and food analysts. Method in plant histology; microchemical technique, and quantitative determination of adulterants. Laboratory work and recitations. Sterling.

* Absent on leave, 1917.

C2.—THE LIVING PLANT, WHAT IT TEACHES ABOUT LIFE AND ITS USES. Five hours credit. First and second semester. Stevens.

C4.—PLANT HISTOLOGY. Two hours credit. First semester. Prerequisites, course 1 in the College, course 2 in the College, course 1 in the School of Pharmacy, or its equivalent. Stevens.

CHEMISTRY.

Professors: BAILEY, CADY, DAINS, WHITAKER.

Associate Professor: ALLEN.

Assistant Professors: YOUNG, FARAGHER, STRATTON, LONG, BRUCKMILLER, ESTES.

1.—ELEMENTARY CHEMISTRY. Five hours credit. First semester, 10 to 12 or 1 to 3; second semester, 10 to 12. Recitations, lectures, and laboratory work. Students presenting chemistry for admission to the College are not admitted to this course. Stratton and assistants.

2.—INORGANIC CHEMISTRY. Five hours credit. First semester. Lectures and recitations, M. W. F., 8 or 9. Laboratory, Tu. Th., 8 to 10, or 1 to 3. Prerequisite, course 1. Cady, Faragher, and assistants.

3.—INORGANIC CHEMISTRY AND QUALITATIVE ANALYSIS. Five hours credit. Second semester. Lectures and recitations, Tu. Th., 8 or 9. Laboratory, M. W. F., 8 to 10, or 1 to 3. Prerequisite, course 2. Cady, Faragher, and assistants.

6.—INORGANIC CHEMISTRY AND QUALITATIVE ANALYSIS. Five hours credit. Second semester, laboratory M. W. F., 1 to 3; recitation, Tu. Th., 1. Open only to pharmacy students. Prerequisite, course 1. Bruckmiller.

50.—QUANTITATIVE ANALYSIS. Three hours credit. First semester, 10 to 12. Open only to pharmacy students. Prerequisites, courses 1 and 6. Allen.

51.—QUANTITATIVE ANALYSIS I. Two, three, or five hours credit. Both semesters, 10 to 12, or 1 to 3. A general course covering the fundamental principles of gravimetric and volumetric analyses. Prerequisite, course 3. Allen and assistants.

52.—QUANTITATIVE ANALYSIS II. Two, three, or five hours credit. Both semesters, 1 to 3, or by appointment. In connection with this work some specialty, such as cement, glass, or packinghouse industry, rock analysis, paint analysis, etc., may be pursued. Prerequisite, course 51. Allen and assistants.

52A.—SANITARY WATER ANALYSIS. Three hours credit. Second semester, 10 to 12. Laboratory work in the sanitary analysis of water and sewage. Lectures and assigned readings on the interpretation of results and upon the methods used. Especially designed to fit students for commercial positions in this line of work. Prerequisite, course 51. Bruckmiller.

52C.—GAS ANALYSIS. Two hours credit. First semester, by appointment. A laboratory course of general gasometric methods, analysis of flue gases, artificial and natural gases. Prerequisite, course 51. Allen.

52D.—FOOD ANALYSIS. Three hours credit. Both semesters, by appointment. Lectures and laboratory. Prerequisites, courses 51 and 61, or 62. Long.

52E.—OIL ANALYSIS. Two hours credit. First semester, by appointment. The examination of petroleum and products, lubricating oils, asphalts, and road materials. Prerequisite, course 51. Allen.

52G.—THE CHEMISTRY OF MILLING AND BAKING. Two hours credit. Second semester, by appointment. Designed to meet the requirements of chemists desiring to carry on control work in the milling industry. Prerequisites, courses 51 and 61, or 62. Estes.

52H.—INORGANIC INDUSTRIAL CHEMISTRY. Two hours credit. Second semester, by appointment. Includes analyses of soap, paper, leather, starches, etc. Prerequisites, courses 51 and 61, or 62. Estes.

54.—SANITARY WATER ANALYSIS. Five hours credit. First semester, 8 to 10. Students electing this course must first consult the Department of Pharmacy. Bacteriological technic and reading along general lines, followed by special work on the bacteriology of water and sewage; also chemical quantitative analysis of water and sewage and interpretation of results of sanitary tests. Young.

60.—CHEMISTRY OF FOOD PRODUCTS. Five hours credit. Second semester, 3 to 5. A general course for students interested in food supply. It includes a study of the source, composition, adulteration, and use of foods. Special attention is also given to the world's supply of foods, and its manufacture and preparation for the market. Prerequisite, course 1. Bailey.

61.—ELEMENTARY ORGANIC CHEMISTRY. Five hours credit. Both semesters, 1 to 3. Designed to cover briefly the aliphatic and aromatic series, to discuss the more important derivatives and to show their relationships and applications. Prerequisite, ten hours chemistry. Dains.

62.—ORGANIC CHEMISTRY I. Five hours credit. First semester, M. W. F., at 9. Laboratory, Tu. and Th. mornings or afternoons. For College and Engineering students who wish a more detailed knowledge of organic chemistry. In this course the aliphatic series only is discussed, the aromatic series being reserved for organic chemistry 63. Prerequisite, ten hours chemistry. Dains.

63.—ORGANIC CHEMISTRY II. Five hours credit. Second semester, M. W. F., at 9. Laboratory, Tu. and Th. mornings or afternoons. Aromatic series. Prerequisite, course 62. Dains.

70.—PHYSICAL CHEMISTRY I. Five hours credit. First semester, at 10. A course paying special attention to electrochemistry. Lectures, recitations, and laboratory work. Prerequisites, course 3 and satisfactory preparation in general physics and calculus. Cady.

71.—PHYSICAL CHEMISTRY II. Five hours credit. Second semester, at 10. A general course in theoretical and physical chemistry. Lectures, recitations, and laboratory work. Prerequisites, courses 1, 2, 3, 51, 61 or 62, and satisfactory preparation in general physics and calculus. Cady.

80.—INORGANIC INDUSTRIAL CHEMISTRY. Three hours credit. Second semester, at 11. A study of the inorganic industries, including such topics as the manufacture of acids, alkalies and other chemicals, fertilizers, paints and pigments, glass and cement, and the purification of water. Prerequisites, courses 1, 2, and 3. Whitaker, Bruckmiller.

81.—ORGANIC INDUSTRIAL CHEMISTRY. Three hours credit. First semester, at 9. A study of the organic industries, including such topics as the refining of petroleum, the distillation of wood and coal, packing houses, fermentation, soaps, leather, paper, starches, sugars, dye-stuffs, etc. Prerequisites, courses 1, 2, 3, and 61 or 62. Whitaker, Estes.

ENGLISH LANGUAGE AND LITERATURE.

Associate Professor: RAYMOND.
Instructor: WATTLES.

1E.—RHETORIC I. Three hours credit. Both semesters. Raymond, Wattles.

2E.—RHETORIC II. Two hours credit. Second semester. Raymond, Wattles.

59.—ADVANCED COMPOSITION. Three hours credit. Both semesters; first semester at 8 and 9. Practice in gathering and analyzing material, and in the presenting of information and opinion in written papers. Elective in Junior or Senior year. Raymond.

FRENCH.

Professor: GALLOO.*Associate Professor:* NEUEN SCHWANDER.*Assistant Professors:* STANTON, GARDNER, GAGE.*Instructors:* CRAM, BOURDON.

- 1.—ELEMENTARY FRENCH I. Five hours credit. Both semesters.
Neuen Schwander, Gardner, Gage, Stanton, Cram, Bourdon.
- 2.—READING AND GRAMMAR. Five hours credit. Both semesters. A continuation of course 1.
Neuen Schwander, Gardner, Gage, Stanton, Cram, Bourdon.
- 5.—SCIENTIFIC FRENCH. Three hours credit. First semester, by appointment. Open to students who are specializing in the sciences and who need an accurate and ready understanding of scientific French. Prerequisites, courses 1 and 2.
Gage.

GEOLOGY.

Professor: HAWORTH.*Assistant Professors:* TODD, MOORE, HAYNES.

- 2.—ELEMENTARY GEOLOGY. Five hours credit. Both semesters.
Todd, Moore, Haynes.

GERMANIC LANGUAGES AND LITERATURES.

Professors: ENGEL, THURNAU.*Associate Professors:* CORBIN,* KRUSE.*Assistant Professors:* BRIGGS, STURTEVANT, JONES,
PALMBLAD.*Instructors:* WILSON, SPANGLER.

- 1.—ELEMENTARY GERMAN. Five hours credit. Both semesters, 1 to 3.
Engel, Thurnau, Kruse, Jones, Wilson, Spangler.
- 2.—PROSE READINGS. Five hours credit. Both semesters.
Corbin, Kruse, Jones, Wilson.
- 3A.—INTERMEDIATE GERMAN. Five hours credit. Both semesters, 8, 3.
Thurnau, Corbin, Sturtevant, Wilson, Spangler.
- 4A.—GERMAN CLASSICS. Five hours credit. Both semesters, 9, 10, 2.
Engel, Sturtevant, Jones, Spangler.

3B.—SCIENTIFIC GERMAN. Five hours credit. First semester, 8. A thorough review of grammar; das Edle Blut or equivalent text, 40 to 50 pages, as introductory reading matter, followed by a scientific German reader. This course is intended for students in engineering and medicine and those majoring in science, and may not be counted toward a major in German. The aim of the course is to introduce the student to the style and vocabulary of scientific German and to develop the ability to read simple scientific writings. Open to students who have had German 1 and 2.

4B.—SCIENTIFIC GERMAN. Five hours credit. Second semester, 8. Reading of scientific German texts in class and assigned readings on selected topics outside of class. This course is also intended for students in engineering and medicine and those majoring in science and may not be counted toward a major in German. Its aim is to develop the rapid reading of more advanced scientific German in special fields. It is planned as a continuation of course 3B, but is open to students who have had 3A.

* Absent on leave, 1917-'18.

MATHEMATICS.

Professors: VAN DER VRIES,† ASHTON.*Associate Professors:* MITCHELL, STOFFER.*Assistant Professors:* JORDAN, WHEELER, LEFSCHETZ.*Instructor:* MILLER.

- 2a.—COLLEGE ALGEBRA. Three hours credit. Both semesters.
Stouffer, Miller.
- 3a.—PLANE TRIGONOMETRY. Two hours credit. Both semesters.
Stouffer, Miller.
- 4.—ANALYTICAL GEOMETRY I. Two hours credit. Both semesters.
Van der Vries, Stouffer.
- 5.—CALCULUS I. Three hours credit. Both semesters.
Ashton, Mitchell.
- 6.—ANALYTICAL GEOMETRY II. Two hours credit. Both semesters.
Ashton, Mitchell.
- 7.—CALCULUS II. Three hours credit. Both semesters.
Mitchell, Stouffer.

PHARMACEUTICAL CHEMISTRY.

Professors: NELSON, SAYRE, HAVENHILL.

- 1.—PHARMACEUTICAL CHEMISTRY. Two, three or five hours credit. First semester, 8 to 10. A course embracing the fundamental analytical operations necessary in determining the strength and purity of drugs and medicines.
Havenhill.
- 2.—PLANT ANALYSIS. Two and one-half or five hours credit. Elective. Either semester, by appointment. The separation and estimation of the proximate principles of plants. Must be preceded by chemistry 4 and 54, or chemistry 4 and pharmaceutical chemistry 1.
Sayre, Havenhill.
- 3.—ANALYSIS OF NOSTRUMS. Five hours credit. Elective. Either semester, by appointment. Must be preceded by pharmaceutical chemistry 3.
Sayre.
- 50.—ANALYSIS OF DRUGS. Five hours credit. Elective. Either semester, by appointment. This is a companion course to food analysis (see chemistry 58) and is arranged especially for students who desire to qualify as food and drug analysts. Must be preceded by chemistry 4 and 54, or chemistry 4 and pharmaceutical chemistry 1.
Havenhill.

PHARMACY AND MATERIA MEDICA.

Professors: SAYRE, HAVENHILL, BAILEY.

- I.—INTRODUCTORY PHARMACY. Two hours credit. First semester, Tu. Th., 9. Lectures and recitations. The history of the Pharmacopœia and a study of the apparatus and processes employed in the preparation of medicines.
Havenhill.
- 2.—PHARMACEUTICAL ARITHMETIC. Three hours credit. First semester; M. W. F., 9. A study of weights, measures, specific gravity, and the principles of pharmaceutical arithmetic. Lectures and recitations.
Havenhill.
- 3.—OFFICIAL PHARMACY. Two hours credit. Second semester, Tu. Th., 11. A systematic study of the official preparations, including their classifications, preparation, and preservation. Must be preceded by course 1. Lectures and recitations.
Havenhill.

† On leave for war work, second semester.

4.—INORGANIC MEDICINAL CHEMICALS. Three hours credit. Second semester, M. W. F., 10. The source, manufacture, physical properties, general and specific characteristics and identity of inorganic substances used in medicine. Lectures, recitations, and laboratory work. Must be preceded by introductory chemistry. Havenhill.

51.—GENERAL REVIEW OF PHARMACY. Two hour credit. Senior; second semester, Tu. and Th., 10. A synoptic review of the essentials of pharmacy, chemistry, and materia medica. Havenhill.

6.—DRUG STORE MANAGEMENT. One hour credit. Senior second semester, Tu., 10. A lecture course with collateral reading relating to the legal and business problems confronting the retail pharmacist. Sayre, Havenhill, Watson, and invited lecturers.

7.—LIBRARY WORK. Hours by appointment, second semester (b). Specially designed to familiarize the student with pharmaceutical literature; include exercises in indexing and reviewing. Sayre.

8.—Manufacture of artificial fruit essences and other compound ethers. Sayre.

9.—PHARMACEUTICAL JURISPRUDENCE. Hours by appointment. A study of the laws pertaining to pharmacy in different states, and to the laws pertaining to the mercantile business, together with practical business suggestions. A course of not less than ten lectures, given in connection with the Pharmaceutical Society.

10.—ELEMENTARY ACCOUNTING. Hours by appointment. A course of lectures covering the principles of accounting applicable to the business of pharmacy. Given under the supervision of the Department of Economics and Commerce.

11.—INTRODUCTORY PHARMACOLOGY. One hour credit. First semester, Th., 1 to 3. A course designed for medical students, embracing metrology, and the processes and apparatus used in the preparation of medicines including the elements of prescription writing and a relief outline of the official preparations. Havenhill.

50.—MANUFACTURING PHARMACY. Eight hours credit. Senior; first semester, 1 to 4. Practical work in the manufacture of standard medicinal preparations, as contained in the Pharmacopœia and National Formulary. Laboratory work and recitations. Must be preceded by Pharmacy 1, 2, 3, 4, and Botany 1. Havenhill.

51.—PRESCRIPTION PRACTICE. Two hours credit. Senior; second semester, (a) 8 to 10. Compounding of prescriptions and a practical study of incompatibilities. Lectures and laboratory work. Prerequisite, course 50. Nelson.

52.—MATERIA MEDICA I. Three hours credit. Senior; first semester, 11. A critical study of the drugs and preparations of the U. S. Pharmacopœia and National Formulary. Lectures and recitations.

53.—ORGANIC MATERIA MEDICA AND PHARMACOLOGY II. Four hours credit. Senior, second semester (a and b), M. Tu. W. Th., 11. The classification, physical description and chemical constitution of the crude drugs of the pharmacopœias; their chemical and physiological properties, and therapeutic application; methods of prescribing and dispensing; the action of organic and inorganic chemicals and their physiological relationships. Lectures and recitations. Sayre.

54.—TOXICOLOGY. One hour credit. Senior; first semester, F., 9. Lectures on the sources, properties, methods of detection, and antidotes for poisons. Must be preceded by fifteen hours of chemistry. Bailey.

55.—THESIS. Five hours credit. Senior; second semester. Original research in one of the subjects connected with the pharmaceutical profession. An outline of the work should be presented to the Dean by the first of the second semester.

PHYSICS AND ASTRONOMY.

Professor: KESTER.*Associate Professor:* RICE (M. E.).*Assistant Professors:* STIMPSON, SMITH (T. T.).**Instructor:* WHITEMORE.*

1.—THE DEVELOPMENT OF PHYSICS, INCLUDING RECENT ADVANCES. Five hours credit. Kester.

5a.—GENERAL PHYSICS I. Three hours credit. First semester. Kester.

5b.—GENERAL PHYSICS LABORATORY I. Two hours credit. First semester. Kester.

6a.—GENERAL PHYSICS II. Three hours credit. Second semester. Kester.

6b.—GENERAL PHYSICS LABORATORY II. Two hours credit. Second semester. Kester.

PHYSIOLOGY.

Professor: STOLAND.

M1.—PHYSIOLOGY. Five hours credit. Second semester. Stoland.

CORRESPONDENCE COURSES.

Through the Correspondence-Study Department of the Extension Division, the School of Pharmacy offers (1) courses for those who wish to become registered assistant pharmacists or registered pharmacists; (2) a program of studies indorsed by the Kansas State Board of Pharmacy, and leading to a correspondence certificate; (3) technical courses in introductory pharmacy, organic materia medica, and pharmacy physiology, which may under certain conditions count toward the degree of B. S.

For details, see University Extension Division announcements, under "Pharmacy."

FOOD AND DRUG ANALYSIS.

The legislature in 1905 passed a bill making it the duty of the chemistry departments of the University and the State Agricultural College under the direction of the State Board of Health, to make analyses of samples of foods, drugs, and beverages collected by any county or city board of health of the state of Kansas and to make reports upon the same.

For details of the work, see Section XII of the Catalog.

For *The Pharmaceutical Society*, see General Information Section of Catalog, under "University Organizations."

* On leave for war work.

SECTION VIII.

The School of Medicine.

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FACULTY.

FRANK STRONG, Ph. D., President.
SAMUEL J. CRUMBINE, M. D., Dean.
MERVIN T. SUDLER, Ph. D., M. D., Associate Dean and Professor of Surgery.
EDGAR H. S. BAILEY, Ph. M., Professor of Pharmacy.
LUCIUS E. SAYRE, Ph. M., Professor of Pharmacy.
L. D. HAVENHILL, B. S., Professor of Pharmacy.
DON C. GUFFEY, A. M., M. D., Professor of Obstetrics and Gynecology.
JOHN SUNDWALL, Ph. D., M. D., Professor of Anatomy.
LINDSAY S. MILNE,¹ M. B., M. D., Professor of Medicine.
PETER T. BOHAN, M. D., Professor of Medicine.
BENNETT M. ALLEN, Ph. D., Professor of Zoölogy.
GEORGE B. ROTH, B. S., M. D., Professor of Experimental Pharmacology.
OLE O. STOLAND, Ph. D., Professor of Physiology.
FRANK B. DAINS, Ph. D., Professor of Chemistry.
RALPH H. MAJOR, A. B., M. D., Professor of Bacteriology and Pathology.
GEORGE E. COGHILL, Ph. D., Professor of Anatomy.
JACOB BLOCK, M. D., Professor of Genito-urinary Surgery.
SAMUEL S. GLASSCOCK, M. D., Professor of Psychiatry.
JOSEPH E. SAWTEIL, M. D., Professor of Otorhinolaryngology.
ISADORE JULIUS WOLF, M. D., Professor of Medicine.
FRANKLIN E. MURPHY, M. D., Professor of Clinical Medicine.
WILLIAM F. KUHN, A. M., M. D., Professor of Neurology.
LYMAN L. UHLS, M. D., Professor of Psychiatry.
EDWARD J. CURRAN, M. D., D. Ophth., Professor of Ophthalmology.
C. FERDINAND NELSON, Ph. D., M. D., Professor of Physiological Chemistry.
GEORGE M. GRAY, M. D., Professor of Clinical Surgery.
WILLIAM W. DUKE, Ph. B., M. D., Professor of Experimental Medicine.
ANDREW L. SKOOG, Ph. D., Professor of Neurology.
RICHARD L. SUTTON, M. D., Professor of Dermatology.
WILLIAM L. MCBRIDE,¹ M. D., Professor of Dermatology.
ARTHUR E. HERTZLER, Ph. D., M. D., Associate Professor of Surgery.
ROBERT M. SCHAUFFLER,³ A. B., M. D., Associate Professor of Surgery.
CLARENCE B. FRANCISCO,¹ A. B., M. D., Assistant Professor of Surgery.
WILLIAM K. TRIMBLE, M. D., Associate Professor of Medicine.
JOSEPH L. McDERMOTT, M. D., Assistant Professor of Roentgenology.
WILLIAM J. V. DEACON, Associate Professor of Preventive Medicine.
FRANK D. DICKSON,¹ M. D., Assistant Professor of Orthopedic Surgery.
ORVAL J. CUNNINGHAM, M. D., Associate Professor of Surgery (Anesthetics).
CHARLES A. HASKINS,¹ B. S., Associate Professor of Sanitary Engineering.
JOSEPH E. WELKER,³ B. S., M. of C. E., Assistant Professor Sanitary Engineering.
NADINE NOWLIN, A. M., Assistant Professor of Zoölogy.
JOHN G. HAYDEN,¹ M. D., Assistant Professor of Surgery.

1. In the service of the government, and therefore on leave of absence.

3. Interim appointment, doing the work of men in war service.

- EDWARD P. HALL, M. D., Assistant Professor of Rhinolaryngology.
 ROBERT D. IRLAND, M. D., Associate Professor of Obstetrics and Gynecology.
 THOMAS G. ORR, A. B., Assistant Professor of Surgery.
 EUGENE SMITH, M. D., Demonstrator in Anatomy.
 CLIFFORD C. NESSELRODE,¹ M. D., Instructor in Clinical Surgery.
 NOBLE P. SHERWOOD, B. S., M. D., Associate Professor of Bacteriology.
 HERBERT F. VAN ORDEN,¹ M. D., Instructor in Gynecology and Obstetrics.
 DONALD R. BLACK,¹ A. B., M. D., Assistant Professor of Pathology.
 FRANK RIDGE,¹ M. D., Instructor in Medicine (Physical Diagnosis).
 JOSEPH B. COWHERD, M. D., Assistant Professor of Medicine (Pediatrics).
 SAM E. ROBERTS,¹ M. D., Assistant in Otorhinolaryngology.
 HARRY C. BERGER, A. B., M. D., Assistant Professor of Medicine (Pediatrics).
 CHARLES C. DENNIE, M. D., Assistant Professor of Dermatology.
 FRED C. RUMSEY, M. D., Assistant in Surgery.
 BERTHA O. SCHWEIN, M. D., Assistant in Gynecology and Obstetrics.
 OTTO L. CASTLES,⁴ M. D., Instructor in Surgery.
 DARWIN W. DELAP, M. D., Assistant in Clinical Medicine.
 CLARENCE M. MILLS, A. B., Instructor in Physiology.
 GEORGE L. HARRINGTON, M. D., Instructor in Medicine.
 HARVEY P. BOUGHNOU, M. D., Instructor in Medicine.
 WILSON A. MYERS, M. D., Instructor in Medicine.
 LAURENCE A. LYNCH, M. D., Instructor in Medicine.
 EDGAR E. PICKENS, M. D., Assistant in Ophthalmology.
 HERBERT S. VALENTINE,¹ M. D., Assistant in Medicine.
 LENA M. SMITH, A. B., Technical Assistant in Bacteriology and Pathology.
 ELEANOR M. KIBBEY, A. B., Secretary and Assistant Registrar.
 EVELYN STANTON, A. B., Librarian.
 S. MILO HINCH, Superintendent of Bell Memorial Hospital and Supervisor of Nurses.
 ELIZABETH TALLE, Cashier and Clerk of the Bell Memorial Hospital.
 GRACE SCOTT,² R. N., Assistant in the Operating Room.
 MABEL F. HALL, R. N., Assistant in the Operating Room.
 ETHEL M. HAINES, R. N., Assistant in the Dispensary.
 HANNAH MCCOY,² R. N., Assistant in Roentgenology.

ADMINISTRATIVE COMMITTEE.

S. J. CRUMBINE.	D. C. GUFFEY.
M. T. SUDLER.	J. E. SAWTELL.
L. E. SAYRE.	F. E. MURPHY.
G. B. ROTH.	E. J. CURRAN.
P. T. BOHAN.	W. K. TRIMBLE.
JOHN SUNDWALL.	F. B. DAINS.

R. H. MAJOR.

-
1. In the service of the national government, and therefore on leave of absence.
 2. Absent on Red Cross service.
 4. Died, 1917.

THE SCHOOL OF MEDICINE.

HISTORY.

In the act of the legislature establishing the University (1862) the founding of a School of Medicine was contemplated, but conditions were such that it was impossible to carry out these plans at this time. However, steps were taken, as opportunity offered, to further the formation of a School of Medicine, and in 1880 the "Preparatory Medical Course," under the administration of the College, was established. This continued until 1899, when the School of Medicine was definitely organized, and the first two years of medical instruction were offered.

In the fall of 1905 the Kansas City Medical College (founded in 1869), the Medico-chirurgical College founded in 1896), and the College of Physicians and Surgeons (founded in 1893), were merged into the last two years of a four-year medical course under direction of the University of Kansas. This was made possible through a gift to the University of some tracts of land in and about Rosedale, Kan., by Dr. Simeon B. Bell, in memory of his wife, Eleanor Taylor Bell. The work was first given in the laboratory and lecture rooms of the building which had formerly belonged to the College of Physicians and Surgeons and a dispensary was conducted in the building of the Medico-chirurgical College. In January, 1907, the school was moved to the new buildings which had been erected in Rosedale, on the land referred to above.

ORGANIZATION.

THE FACULTY. The faculty of the School of Medicine includes members who give instruction in the work of the first year and a half at Lawrence, and those giving instruction in the work of two and one-half years at Rosedale.

THE ADMINISTRATIVE COMMITTEE. The administrative committee of the School of Medicine has charge of matters affecting the School as a whole, subject to the rules of the Board of Administration. It is made up of the Chancellor of the University, as chairman, the Dean, the Associate Dean, the professor and associate professors from Lawrence and Rosedale.

THE WORK AT LAWRENCE. The work of the first year and a half is given at Lawrence. It consists of the fundamental scientific branches: anatomy, neurology, histology, embryology, physiology, pharmacology, chemistry, bacteriology, etc. The medical students have all the advantages of the University laboratories, libraries, museums, and lectures.

Students should matriculate and register for the first year and a half at Lawrence.

THE WORK AT ROSEDALE. The work of the last half of the second year and the third and fourth years is intended largely to familiarize the student with the various manifestations of diseases and their treatment. Much of the work is done by the bedside, and the student has an opportunity to observe all the processes of making a diagnosis and prescribing the treatment.

DEGREES.

The degree of doctor of medicine is granted to those satisfactorily completing the work of the four-year medical curriculum. The faculty of the School of Medicine determines the standards, examinations, curriculum, etc, leading to the degree of doctor of medicine, and may change these from time to time as necessary or desirable.

Candidates for the degree of doctor of medicine may, under the plan for a six-year curriculum explained below, receive from the College of Liberal Arts and Sciences the degree of bachelor of arts, or the degree of bachelor of science in medicine.

The following plan has been arranged with the College:

College students who have attained at least full Senior standing and who have credit for certain subjects named below may offer in satisfaction of all or part of the requirement of the Senior year the entire first year of the medical curriculum. To such students the College will grant the degree of bachelor of arts.

College students who have attained at least full Junior standing and who have credit for certain subjects named below may offer in satisfaction of all or part of the requirements of the Junior and Senior years the entire first and second years of the medical curriculum. To such students the College will grant the degree of bachelor of science in medicine.

The subjects, or equivalents, which must have been completed before admission to the Medical School are:

Modern language, 10 hours, preferably German I and II.

Chemistry, 10 hours, including I and II.

Physics I, 5*a* and 5*b*, and 6*a* and 6*b*.

Biology, which should include zoölogy III and one course selected from zoölogy I, II, and botany III.

To secure this privilege of offering medical work towards the College degree, the student must have spent one full year in residence at the College before entering upon his medical studies, and must be certified to the Medical School by the Dean of the College as having met all the requirements above named. He must also register in the College as well as the Medical School and be subject to such general regulations of the College Faculty as govern other Juniors and Seniors.

A student who does not fully meet the entrance requirements to the Medical School will enroll in College classes necessary to complete such requirements, after which he may be admitted to the Medical School and enrolled in medical courses, but the aggregate number of hours of such enrollment in the two schools may not exceed that allowed to College students.

Whenever a student has completed the medical work in accordance with the foregoing provisions, the Dean of the Medical School will submit to the Dean of the College a certified statement of that fact accompanied by the recommendation of the Faculty of the School of Medicine that such student be admitted to the appropriate College degree. The name of the candidate will then be sent to the College Faculty as that of a candidate for that degree.

Proportion of High Grades Required for Degrees.

I. A student in order to be accepted for the degree of bachelor of science in medicine must have received a grade of I or II, or of A, B, or C, in at least 90 hours. See College Section of Catalog for details.

II. A student in order to be accepted for the degree of doctor of medicine must have received the grades of A, B, or C, in at least three-fourths of the hours required for graduation. Effective for work done after September, 1918.

Students in residence at the time of the adoption of these regulations will be accepted as candidates for degrees only in case such students have received on the work done subsequent to their adoption the proportion of high grades provided in the foregoing regulations.

REQUIREMENTS FOR ADMISSION.

For entrance into the School of Medicine a student must have completed sixty hours (two years) of work in the College of Liberal Arts and Sciences of the University of Kansas, or work equivalent thereto.

The student who has completed the first two years of college work in another school, and who desires to enter the Medical School, should send a certified transcript of his work to the chairman of the committee on advanced standing, or the Registrar of the University. A rating will then be given on this work, showing under just what conditions he will be accepted by the School of Medicine.

A student may be conditioned in six hours' work, which amount can be completed in the following session of the Summer School, but this condition must be removed before the student enters upon the second year's work in the School of Medicine.

This preliminary college work must include the following:

Chemistry	10 hours.
Physics	10 hours.
Biology	10 hours.
German or French	10 hours.

For description of courses, see alphabetical list in College Section of Catalog. These or their equivalent will be accepted.

The minimum requirement in chemistry is chemistry I and II, but the student is strongly advised to include in his preliminary work a course in qualitative analysis. If time permits, some work in quantitative analysis should be done, as it affords an excellent preparation for physiological chemistry.

The physics requirements include at least 10 hours of college physics. Courses 5a and 5b and 6a and 6b may be offered. Both the latter courses are highly recommended.

The minimum requirement in biology is zoölogy III (comparative anatomy) and one course selected from zoölogy I, zoölogy II, and botany III.

In languages, at least German I and II should be presented. The student, however, is strongly advised to complete German I, II, III, and French I and II. French I and II will be accepted for the minimum language requirement, but German is much preferred.

Optional Work.

For the rest of the two years' college work, courses in history, economics, and psychology are advised, in order to give the student as broad a foundation as possible for his technical studies in the Medical School.

The group and percentage grade requirements in the College must be fulfilled. The above-named courses, as a rule, fit in with these group requirements. *Every prospective medical student is urged to consult the Associate Dean or the Secretary of the School of Medicine in regard to this preparatory work.*

Admission to Advanced Standing.

Credit for work of collegiate or professional standing is granted only on recommendation of the Advanced Standing Committee. For regulations governing the granting of such credit see "Admission to Advanced Standing," Section I, page 49.

REGISTRATION.

All candidates for admission having certificates from accredited schools and all students of the University intending to pursue their studies during the ensuing year must present themselves for registration at the

University on September 16, 17, or 18, 1918. *Registration at a later date will be permitted only on the payment of a fee of one dollar.*

ENROLLMENT.

After registration has been completed with the Registrar, and fees have been paid, students should apply to the Dean for enrollment in their classes. Enrollment the first semester occurs September 17 and 18, 1918, and on the first day of the second semester. *Enrollment at a later date will be permitted only on the payment of a fee of one dollar.*

In order to obtain the degree of doctor of medicine it is necessary to be regularly enrolled in the School of Medicine for at least four full years.

FEES.

First and Second Years.

Matriculation fee, for residents of the state.....	\$5.00
for nonresidents	10.00
Incidental fee, for residents of the state.....	25.00
for nonresidents	35.00
Diploma fee, at graduation.....	5.00
Microscope fee	3.00

Laboratory fees, to cover cost of material used, will be charged by the different departments. The amounts of these fees will average about as follows: Anatomy, \$5 per part; physiology, \$10; pharmacology, \$10; histology, \$5; embryology, \$2; neurology, \$3; chemistry, \$5 to \$8; physiological chemistry, \$3; bacteriology, \$5; pathology, \$5; making the total amount about \$60 per year for residents of Kansas, and about \$80 for nonresidents.

All laboratory fees must be paid before enrollment in classes. Receipts for the same will be required by class instructors before admitting students to class.

Third and Fourth Years.

Students who register in the department at Rosedale, not having been previously enrolled as students of the University of Kansas, are required to pay the regular matriculation fee—for residents of Kansas, \$5; for nonresidents, \$10.

In addition to the matriculation fee each student pays \$100 for each school year, \$50 at the opening of each semester. This amount includes the incidental fees of \$25 and \$35 per annum required by law, and fees to meet, in part, the necessary hospital and clinical expenses.

Students will also be required to rent a microscope (\$3 per year) and to pay the actual cost of materials and apparatus of every kind consumed, wasted, lost, or broken. A stock room is provided where students may purchase any additional material needed, or they may secure the same, if they prefer, in the open market, provided the form and grade of such articles are approved by the instructor in charge.

OUTSIDE OCCUPATION. It is not advisable to attempt to carry full work in the Medical School and to engage in outside occupation. If it is necessary for students to earn a portion of their expenses while in school a longer time will be required to complete the course. Should students for any reason be unable to carry full work, they may, at the discretion of the Associate Dean, be withdrawn from certain courses.

EQUIPMENT.

LABORATORY. For the work of the first two years of the medical course at Lawrence the scientific equipment of the University is available. The greater part of the work of the first two years is of a purely scientific character, and most of the student's time is spent in laboratories. The instruction is given by men who devote themselves entirely to teaching.

The Laboratory Building at Rosedale contains teaching laboratories, private laboratories for instructors, the necessary lecture rooms, morgue and specimen rooms, animal rooms, business offices, and the library. The museum contains more than one thousand specimens, preserved in Kaiserling's fluid. A sufficient number of microscopes is provided so that each student has his own equipment. *However, students are urged to purchase their own microscopes in their first year.*

LIBRARY. The library at Rosedale is a part of the general University library and is managed as such. The files of periodicals have been carefully selected, with a view to training the student to use the best in current medical literature. There is a collection of reprints and dissertations. Carefully selected monographs and textbooks are added from year to year.

HOSPITAL. The hospital has accommodations for sixty-five patients. Clinical material is furnished, first, by free patients (the expense being met by legislative appropriation) who are sent in from the dispensary or by the heads of the departments; second, by county cases which are sent in under the laws passed by the legislature permitting counties to send their charity cases to this hospital for treatment, the counties paying the actual expenses incurred; third, by patients who can afford to pay hospital fees and who are admitted as clinical patients on presenting a letter from their family physician stating that they cannot afford to pay for professional services and are recommended for free treatment.

Internes are appointed out of every graduating class to serve in the hospital. The internes are selected by the Administrative Committee from the applicants who have made the highest average in their work during the last two years.

DISPENSARY. The out-patient department is housed in the Dispensary Building. It is a two-story fireproof building, containing a drug room, a laboratory, a lecture room, a waiting room, and consultation rooms. It is open from 10 to 12 a. m. and from 2 to 4 p. m., Sundays and holidays excepted. Here students have an opportunity to study and examine ambulant patients under competent supervision in the clinic.

OPPORTUNITIES IN CITY HOSPITALS. Instruction is also given at St. Margaret's Hospital of Kansas City, Kan., by permission of the Sisters who control this institution. Its capacity is three hundred beds. Fourth-year students spend three mornings a week in this hospital. The school is allowed similar privileges by the authorities of Mercy Hospital, where instruction in pediatrics is given.

CURRICULUM.

FRESHMAN YEAR.

FIRST SEMESTER (at Lawrence):

Anatomy 1, 2, 3, 4, 5—Human Dissection and Osteology.
Anatomy 7—Histology and Splanchnology.
Organic Chemistry.

SECOND SEMESTER (at Lawrence):

Anatomy 1, 2, 3, 4—Dissection.
Anatomy 8—Embryology.
Anatomy 9—Neurology.
Physiological Chemistry.

SOPHOMORE YEAR.

FIRST SEMESTER (at Lawrence):

Physiology 1.
Materia Medica.
Bacteriology.
Toxicology.
Parasitology.
Pharmacology.

SECOND SEMESTER (at Rosedale):

Pathology 3.
Anatomy 6—Topographical.
Experimental Pharmacology 1, 2.
Materia Medica, Pharmacology 3.
Medicine 2, 3.
Surgery 1, 2.
Obstetrics 1.
Hygiene.
Ophthalmology 1.
Pediatrics.

JUNIOR YEAR. (At Rosedale.)

FIRST SEMESTER:

Medicine 4, 5, 6.
Surgery 3, 5, 7, 12.
Obstetrics 2.
Pathology 4.
Ophthalmology 2.
Pediatrics 1.

SECOND SEMESTER:

Medicine 4, 5, 7, 8, 13.
Surgery 4, 7, 8, 9.
Obstetrics 3, 4.
Ophthalmology 2.
Neurology 1.
Otorhinolaryngology 1, 2.
Pediatrics 2.
Hematology, Serology.
Dermatology.

SENIOR YEAR. (At Rosedale.)

FIRST SEMESTER:

Medicine 10, 11.
Surgery 10, 12, 13, 14, 15, 17.
Obstetrics 7, 8.
Neurology 2, 3, 4.
Pediatrics, 3.
Otorhinolaryngology 3, 4.
Ophthalmology 3.

SECOND SEMESTER:

Medicine 10, 11, 13.
Surgery 11, 12, 13, 14, 15, 17.
Gynecology, Obstetrics 7, 8.
Neurology 2, 3.
Dermatology 2.
Pediatrics 3.
Otorhinolaryngology 3, 4.
Ophthalmology 3.

DESCRIPTION OF COURSES.

ANATOMY.

Professors: SUNDWALL, COGHILL.
Demonstrator: EUGENE SMITH.
Assistant: WM. S. SPICER.
Technical Assistant: BEATRICE KLEIN.

The department of anatomy includes gross anatomy (dissection), histology, embryology, and neurology. The laboratories are located in the basement of the Museum of Natural History, and are thoroughly equipped with apparatus, specimens, models, charts, and materials for both advanced and elementary work. For those prepared to carry advanced work and research special facilities are afforded.

By the provisions of state law there is available an abundant supply of dissecting material. Abundant material for the study of osteology is furnished. The laboratories for microscopic anatomy are well supplied with all the apparatus, chemicals, and stains essential for both elementary and research work.

In the study of the various tissues and organs special emphasis is laid on their development and gradual differentiation. A close relation always exists between the microscopic and gross anatomy, and every effort is made to teach students the unity of the two. Independent work is always emphasized.

The library receives most of the current anatomical and morphological periodicals. In addition it contains many of the more important books and monographs on anatomy and related subjects.

A fee is charged each student in anatomy, which covers the actual cost of material consumed.

Ten hours of biology (zoölogy and botany) or their equivalent are prerequisites for all courses in anatomy except introductory anatomy. The biological training should include comparative vertebrate anatomy.

COURSES OF INSTRUCTION.

INTRODUCTORY ANATOMY. A course on the structure of the human body for college students other than medical students. Five hours credit.

1, 2, 3, 4. Required of Medical Students.—The student must make a complete dissection of the human body. Atlases and textbooks are used as guides. The work in the laboratory is as independent as possible. Drawing and notes supplement the dissections. Quizzes are given by instructors on parts as completed. Credit is given only upon the completion of the work outlined and the passing of final examinations—both written and practical. Each course is supplemented by lectures bearing on the practical phases of the dissection.

Sundwall, Coghill, E. Smith, Spicer.

1.—DISSECTION OF THE ARM AND THORACIC WALL. Three hours credit. Fee, \$5.

2.—DISSECTION OF THE LEG, PERINEUM AND ABDOMINAL WALL. Three hours credit. Fee, \$5.

3.—DISSECTION OF THE THORACIC AND ABDOMINAL VISCERA. Four hours credit. Fee, \$5.

4.—DISSECTION OF THE HEAD AND NECK. Four hours credit. Fee, \$5.

5.—HUMAN OSTEOLOGY. One hour credit. A systematic study of the human skeleton. Supplemented by drawings, clay modeling, etc.

Smith.

6.—**TOPOGRAPHICAL ANATOMY.** Two hours credit. A laboratory course in human anatomy, including dissections, study of models, preparations, cross sections. The practical phases are emphasized. Courses 1, 2, 3, 4 and 5 are prerequisites. (At Rosedale.) Fee, \$5. Sundwall.

7.—**HISTOLOGY AND SPLANCHNOLOGY.** Five hours credit. A brief course on the structure of the cell, followed by a systematic study of the structure of organs. Fee, \$5. Coghill, and assistants.

8.—**EMBRYOLOGY.** Two hours credit. The study of the embryology of the chick and pig, followed by a consideration of human embryology. Fee, \$3. Coghill, and assistants.

9.—**NEUROLOGY.** Three hours credit. Gross and microscopic anatomy of the nervous system. Fee, \$3. Coghill, and assistants.

10.—**ADVANCED WORK IN ANATOMY.** By appointment. Opportunities are given advanced students and graduate physicians for advanced work and research, both in gross and microscopic anatomy. Prerequisites, anatomy 1 to 9. Sundwall, Coghill.

11.—**SEMINAR.** Advanced students and physicians are admitted to a seminar in which subjects of current interest in anatomy are discussed. Prerequisites, anatomy 1 to 9, reading knowledge of French and German. Sudwall, Coghill.

Total hours of instruction in work required, 1,008; gross anatomy, 720; neurology, 72; histology, 144; embryology, 72.

ORGANIC CHEMISTRY.

Professor: DAINS.

61.—**ORGANIC CHEMISTRY.** Five hours College credit. First semester, M. W. F., 1 to 2; laboratory, Tu. Th., 9 to 12 or 1 to 4. Lectures, recitations, and laboratory. A general introductory course in organic chemistry, covering the most important classes of organic compounds, with their preparation, properties, and uses. Required of students who have not completed it in the preliminary college work. Fifty-four hours lecture and recitation, 108 hours laboratory work. Dains.

ZOOLOGY.

Professor: ALLEN.

Assistant Professor: NOWLIN.

1.—**PARASITOLOGY.** Two or three hours credit. First semester; lectures, M. and W., at 1; laboratory, F., 1 to 3. This course deals with the animal parasites of man, and is especially designed for the needs of medical students and those interested in public-health problems. Prerequisite, 1 or equivalent. Allen, Nowlin.

BIOCHEMISTRY.

Professors: SAYRE, NELSON.

50.—**BIOLOGICAL CHEMISTRY.** Six hours credit. A survey of the field of biochemistry adapted to the needs of medical students. Lectures, conferences, laboratory work. Prerequisites, general and organic chemistry. Lectures, Tu. Th. F., 1 to 2; laboratory work, M. W. F. afternoon. Six hours college credit. Fifty-four lectures, 162 hours laboratory work. Nelson.

51.—**ADVANCED BIOLOGICAL CHEMISTRY.** Conferences and reports on selected topics. Two or more hours credit. Throughout the year. Nelson.

53.—COLLOID CHEMISTRY. Two hours credit. First semester. A study of colloids and the colloidal state of matter. Special emphasis is laid on the applications of colloid chemistry to problems in biochemistry.

Nelson.

101.—RESEARCH IN BIOLOGICAL CHEMISTRY. Two or more hours credit. Throughout the year.

Nelson.

BACTERIOLOGY.

Professor: BILLINGS.*

Associate Professor: SHERWOOD.

Instructors: TREECE, DOWNS.

50.—GENERAL BACTERIOLOGY. Five hours credit. First semester, 3 to 5. Laboratory work with recitations and a course of lectures on the relation of bacteria to public-health problems. The laboratory work deals with the preparation of media, cultural methods, diagnostic tests, preparation of vaccines, and an intimate study of important pathogenic organisms.

Sherwood, Treece.

53.—BACTERIOLOGY OF FOODS. Five hours credit. Second semester, 1 to 3. Bacteriological examination of milk, oysters, meat, etc.

Treece.

57.—IMMUNITY. Five hours credit. Second semester, 10 to 12. Laboratory study of precipitins, agglutinins, bacteriolysins and complement fixation.

Sherwood, Downs.

61.—SPECIAL PROBLEMS IN BACTERIOLOGY. Two to ten hours credit. Either semester, by appointment. Special work along some definite line with a view to obtaining familiarity with a particular kind of laboratory procedure.

Sherwood.

PHARMACOLOGY, THERAPEUTICS, AND TOXICOLOGY.

Professors: SAYRE, HAVENHILL, BAILEY, NELSON.

The courses offered in this department are especially designed to meet the requirements of medical students, special emphasis being given to the properties, action, and uses of the more important medical agents and poisons.

1.—INTRODUCTORY PHARMACOLOGY. (*At Lawrence.*) Two hours credit. First semester, Th., at 1. This course embraces the study of weights, measures, processes used in the preparation of medicines, illustrated by exercises in the pharmaceutical laboratory; prescription writing; and physical properties and identification of crude drugs.

Havenhill.

2.—PHARMACOLOGY AND MATERIA MEDICA. (*At Lawrence.*) Three hours credit. First semester, at 2, M. T., and W. Classification, chemical and physical properties of drugs, therapeutical application, method of prescribing and dispensing, the action of organic and inorganic chemicals and their physiological relationships. Lectures and recitations. Required of second-year students. Must be preceded by course 1.

Sayre.

3.—PHARMACOLOGY AND MATERIA MEDICA. (*At Rosedale.*) Two hours credit. Second semester, Friday, at 11 and at 1:30. A continuation of course 2. Drugs from the vegetable and animal kingdom (serums and glandular products).

Sayre.

4.—LABORATORY WORK IN PHARMACOLOGY. (*At Lawrence.*) The facilities for pharmaceutical investigation of a practical character are made necessary by the intimate connection of the drug laboratories with the State Board of Health. Investigation of the physiological action of drugs and chemical analysis of active (toxic) principles of drugs. By

* Absent on leave.

special appointment with the Dean, and the department of physiological chemistry; the kind and amount of work to be arranged for.

Sayre, Nelson.

5.—TOXICOLOGY. One hour credit. First semester, Friday, at 9. Lectures on the sources, properties, methods for detection, and antidotes for poisons.

Bailey.

TOTAL HOURS OF INSTRUCTION, 144. Introductory pharmacology, 54, materia medica 72, toxicology 18.

PREVENTIVE MEDICINE.

Professor: CRUMBINE.

Associate Professors: DEACON, HASKINS.

For a number of years the relations existing between the University of Kansas and the Kansas State Board of Health have been very close and intimate. The water, food and drug laboratories of the Board are at the University, the work of analysis being done by the University men. The engineers of the State Board of Health are the engineers of the University. Much of the research and investigation undertaken by the State Board of Health has been through the coöperation of the Faculty of the University.

It is becoming more and more apparent that preventive medicine is to have an increasingly important place in the education and culture of the future physician.

The close relations between the State Board of Health and the University of Kansas have made it easy to bring about the more or less unique relationship that exists between the School of Medicine of the University and the State Board of Health which, in effect, is the union of the curative and preventive agencies of the state.

Realizing the importance of a fundamental understanding of the value of preventive medicine, not only to practitioners of medicine, but in training public-health officers, the School of Medicine has created a separate Department of Preventive Medicine, at the head of which is the Dean of the School, who is the secretary of the State Board of Health.

1.—PUBLIC HEALTH. One hour credit. Second year, second semester, Wednesday at 11.

(a) Sanitary engineering, water supplies, sewage collection, purification and disposal, sanitary architecture, plumbing, ventilation, public buildings, schools, hospitals, dwellings, etc.

(b) Special sanitation of public institutions, of transportation, school hygiene, rural, occupational, and other special sanitation.

2.—PUBLIC HEALTH. One hour credit. Fourth year, first semester, Wednesday at 11.

(a) Introductory, historical, definitions and principles, relations of hygiene to other sciences and professions.

(b) Vital statistics, economics of disease, eugenics, other social aspects and problems.

(c) Immunity, race questions, infection.

3.—PREVENTIVE MEDICINE. One hour credit. Fourth year, second semester, Wednesday at 11.

(a) The study of environment, air, water (including ice and mineral waters), milk, dairy hygiene and milk products, other foods, soil, sewage.

(b) Infectious diseases and their epidemiology (including venereal diseases), notifiable diseases.

(c) Vaccines and protective inoculations.

(d) Disinfection and disinfectants.

(e) Animal parasites.

(f) Insects and disease, the control of diseases through the control of their disseminators.

- (g) Diseases communicated to man by the lower animals.
 (h) Legal and administrative devices for the control of diseases, the principles of sanitary law illustrated by the sanitary laws of Kansas, quarantine and isolation, health officers and boards (federal, state and local), municipal sanitation, pure foods and drugs, hygienic laboratories, the education of the public.

PATHOLOGY AND BACTERIOLOGY. (Rosedale.)

Professor: MAJOR.

Assistant Professor: BLACK.

Technical Assistant: SMITH, L. M.

3.—GENERAL PATHOLOGY. (*At Rosedale.*) Five hours credit. Second semester, M. W. F., 8 to 11; Tu., 8 to 10. Lectures, laboratory, and recitations. This course is devoted to the study of pathological processes, with especial emphasis on the manner in which lesions are produced, considerable time also being devoted to pathological technique. Required of second-year students.

Major, Black.

4.—SPECIAL PATHOLOGY. (*At Rosedale.*) Two hours credit. Second semester, Tu. and F., at 11. Recitations and laboratory. This course takes up the study of special pathology, as illustrated by gross and microscopic specimens. Required of third-year students.

Major.

5.—POST-MORTEM PATHOLOGY. (*At Rosedale.*) Three hours credit. Both semesters. Assigned work. Each student is required to see all autopsies performed during his third year.

Major.

6.—ADVANCED BACTERIOLOGY AND PATHOLOGY. (*At Rosedale.*) Open to advanced students who have had sufficient preparation. Experimental work and original research in all branches of bacteriology, pathology and immunology, arranged to suit the needs of individual students. Major.

8.—GYNECOLOGICAL PATHOLOGY. Three hours credit. First semester. This is essentially a laboratory course, in which the most important pathological lesions of the female genital tract are studied from the standpoint of gross and microscopic pathology. Required of fourth-year students.

Major.

TOTAL HOURS OF REQUIRED WORK, 433. General pathology 234, special pathology 108, *post-mortem* pathology 40, gynecological pathology 51.

PHYSIOLOGY.

Professor: STOLAND.

Instructor: MILLS.

1. (College 70).—PHYSIOLOGY. Ten hours credit. First semester. Lectures and recitations daily, 8 to 9; laboratory and demonstrations, M. Tu. W. Th., 9 to 12. This course covers the field of physiology and is especially adapted to the needs of the medical students. The course is arranged to include the following topics in the order named: (a) Physiology of muscle and nerve, central nervous system and special senses, first half semester; (b) blood, circulation, respiration, the digestive tract, metabolism, excretion, heat regulation, and internal secretions, second half semester.

Stoland, Mills.

2. (College 63).—SPECIAL PROBLEMS IN PHYSIOLOGY. Five to seven hours credit. Both semesters. A course intended for students who wish to pursue special laboratory work or investigation.

Stoland.

3. (College 100).—ORIGINAL RESEARCH IN PHYSIOLOGY. Five to ten hours credit. Both semesters.

Stoland.

PHARMACOLOGY.

Professor: ROTH.*Instructor:* ———

1.—PHARMACOLOGY. (*At Rosedale.*) Three hours credit. M. T. F., at 9. Sophomore year, second semester, three times a week. Lectures and recitations. Didactic instruction which deals primarily with the physiological actions of the more important drugs employed in therapeutics, their uses and methods of administration. Roth.

2.—PHARMACOLOGY. (*At Rosedale.*) Two hours credit. Tu. Th., at 1. Sophomore year, second semester, two afternoons a week. Laboratory instruction illustrating many of the underlying principles considered in course 1. Roth.

3.—PHARMACOLOGY. Credit to be arranged, the amount depending upon the time given to the subject. A course in which students who have had courses 1 and 2 and are properly qualified to do advanced work in pharmacology are given an opportunity to do independent original work.

MEDICINE.

Professors: BOHAN, MURPHY, WOLF, DUKE, GLASSCOCK, KUHN, UHLS, SKOOG, McBRIDE, SUTTON.

Associate Professor: TRIMBLE.

Instructors: BOUGHNOU, LYNCH, HARRINGTON, MYERS.

Clinical Assistants: COWHERD, DENNIE, DELAP.

The course in medicine begins in the second half of the second year and leads up to the individual study of clinical cases in the fourth year.

SECOND YEAR.

1.—PHYSICAL DIAGNOSIS I. Two hours credit. Second semester, M. W., 9 to 11. The course consists of demonstrations and practical exercises illustrating the simpler methods of physical examination of the normal organs, with the exposition of the physical laws involved. It includes also instruction in the recording of clinical cases. Demonstrations are also conducted in the dispensary and in the hospital for the practical study of physical signs of diseases conditions. Trimble, Boughnou.

2.—LABORATORY DIAGNOSIS. Two hours credit. Second semester, Tu. 10 to 12. In this class students are trained in the methods of examining blood, sputum, and throat secretions, gastric contents, cerebrospinal fluids, urine, feces, pathological exudates, etc. Trimble.

THIRD YEAR.

4.—SYSTEMATIC MEDICINE. Two hours credit. Both semesters, Tu. F., 9 to 10. A systematic course of lectures is given on the diseases of the cardiovascular and respiratory systems, the peritoneum, liver, kidney, adrenals, thyroid, pancreas, and disorders of metabolism. (Third and fourth year.) Bohan.

5.—CLINICAL MEDICINE. Two hours credit. Both semesters, M. Th., 10 to 11. Ward classes are held twice a week, in which cases are demonstrated, as far as possible, to illustrate the subjects of the lecture course at that time. Murphy.

Ward Work. Students are assigned to cases for individual study, and are required to prepare records of these cases and to note the progress and treatment of the disease.

6.—RECITATIONS. In this course students are quizzed on lessons assigned in Osler's Practice of Medicine.

M. Th., 8 to 9, both semesters; two hours credit.

Boughnou.

W. F., 3 to 4, both semesters; two hours credit.

Lynch.

Sat., 9 to 10, both semesters; one hour credit.

Myers.

7.—CLINICAL BACTERIOLOGY, SEROLOGY, AND HEMATOLOGY. Two hours credit. Second semester, F., 9 to 12. In this course instruction is given in agglutinative and other serum tests, including the Widal and Wassermann reactions, the bacteriology of pathological exudates, blood cultures, vaccine therapy and diseases of the blood. Trimble.

8.—DISEASES OF THE STOMACH AND INTESTINES. One hour credit. Second semester, S., 9 to 10. A systematic lecture course on diseases of the stomach and intestines. Wolf.

9.—OUT-PATIENT WORK. Assignments are also made to the different dispensary rooms. Each case is allotted to a student, whose duty is to prepare the history and to examine the patient, under the direction of the physician in charge, who advises the treatment to be carried out in each case.

FOURTH YEAR.

10.—CLINICAL MEDICINE. Eight hours credit. Both semesters, M. Th. at St. Margaret's Hospital, Tu. at Bell Hospital, 10 to 12. Clinics are given at the bedside and in the dispensary on selected cases. Each of these cases has previously been studied by one student, who is responsible for the history of the case and for a special knowledge of this type of disease. Bohan.

11.—GASTRO-INTESTINAL DISEASES. Three hours credit. W. F., 10 to 12. Duke.

12.—DIETETICS. One hour credit. First semester, S., 10 to 11. A lecture course on the dietetic treatment of disease. Wolf.

13.—RECITATION COURSE, based on Osler's Practice of Medicine. Two hours credit. Both semesters, Tu., at 8; and F., at 1. Harrington.

PSYCHIATRY AND NEUROLOGY.

THIRD AND FOURTH YEARS.

1.—FUNCTIONAL AND ORGANIC DISEASES OF THE NERVOUS SYSTEM. One hour credit. First semester, Sat., at 11. Lectures. Required of third-year students. Kuhn.

2.—PSYCHIATRY. One hour credit. F., at 1. Lectures covering the following subjects are given: History of insanity, forms of insanity, care and treatment of insanity in hospitals, care and treatment of insanity in general practice, state care of insane, and the relation of heredity to insanity. Both terms. Fourth year. Glasscock, Uhls.

3.—CLINICAL NEUROLOGY AND NEUROPATHOLOGY. Two hours credit. Both terms, W., 2 to 4. This course includes practical exercises and demonstrations on the pathology of nervous diseases. Clinical demonstrations of neurological cases are also conducted, and students are assigned to the practical study of the nervous cases in hospital to be reported on at the class meeting. Skoog.

4.—CLINICAL NEUROLOGY. One hour credit. Th., at 9. Demonstrations of cases at St. Margaret's Hospital. Required of Seniors. Skoog.

DERMATOLOGY.

THIRD YEAR AND FOURTH YEAR.

1.—INTRODUCTORY COURSE. One hour credit. Both semesters, Tu., at 8. Lectures and recitations. The anatomy and physiology of the skin, together with symptomatology, pathology, and clinical manifestations of the commoner skin diseases. Required of third-year students, spring term, and fourth-year students, fall term. Dennie.

FOURTH YEAR.

- 2.—CLINICAL DERMATOLOGY. One hour credit. Second semester, Sat. a. m. Lectures and demonstrations of the various skin diseases, at the Bell Memorial and St. Margaret's hospitals. Fourth year. Sutton.
- 3.—DISPENSARY CLINICS. Tu. Sat., 2 to 4. Dennie.

PEDIATRICS.

THIRD YEAR.

- 1.—PEDIATRICS. One hour credit. Third year, fall semester, Th., at 1. Lectures and recitations on infant feeding. Diseases of malnutrition and gastro-intestinal disturbances. Cowherd.
- 2.—PEDIATRICS. One hour credit. Second semester, M. W. Sat., at 1. Students are shown normal children as well as abnormal from birth to fifteen years of age. Special emphasis is laid on normal and abnormal physical findings. Sections limited to four students. This work is given in the wards of Children's Mercy Hospital. Cowherd.

FOURTH YEAR.

- 3.—PEDIATRICS. One hour credit. First semester, M. W. Sat. Continuation of course 2. Cases are assigned to students for examination and study. Differential diagnosis and treatment are particularly emphasized. Methods of infant feeding are taken up in detail. Children's Mercy Hospital. Sections limited to four students. Cowherd.

SURGERY.

Professors: SUDLER, BLOCK, GRAY, SAWTELL, CURRAN.
Associate Professors: HERTZLER, CUNNINGHAM, SCHAUFFLER.
Assistant Professors: ORR, HAYDEN, HALL, FRANCISCO.
Instructors: NESSELEODE, CASTLES.
Assistants: ROBERTS, MCCARTY, RUMSEY.

Instruction in the principles of the various branches of surgery is given by means of lectures, recitations, and assigned subjects. Clinical instruction is given in the dispensary, in the Bell Memorial Hospital, and in St. Margaret's Hospital.

SECOND YEAR.

- 1.—ANESTHETICS. One hour for nine weeks during the spring term. Lectures and assigned reading. Required of second-year students. Saturday, at 11. Cunningham.
- 2.—MINOR SURGERY. Two hours credit. Second semester. Instruction in bandaging and dressings, at the dispensary. Required of second-year students. S., at 9. Orr.

THIRD YEAR.

- 3.—GENERAL SURGERY. Two hours credit. First semester, M. and Th., at 11. Lectures, recitations, conferences, and assigned work. An introduction to the principles underlying surgical procedure. Required of third-year students. Sudler.
- 4.—GENERAL SURGERY. Two hours credit. Second semester, Tu. and Th., at 1. A continuation of course 1. Required of third-year students. Sudler.
- 5.—FRACTURES AND DISLOCATIONS. Two hours credit. First semester, Tu. and Th., at 9. Lectures and recitations. Required of third-year students. Orr.
- 7.—GENITO-URINARY SURGERY. One hour credit. Both semesters, F., at 9. Lectures and recitations. Required of third-year students. Block.

8.—SURGICAL PATHOLOGY. Two hours credit. Second semester, Tu. and F., at 2. Required of third-year students. Hertzler.

THIRD AND FOURTH YEARS.

9.—CLINICAL SURGERY. At the Bell Memorial Hospital. Two hours credit. Spring semester, W., 9 to 12. Required of third-year students. Sudler.

FOURTH YEAR.

11.—OPERATIVE SURGERY. Two hours credit. Second semester, W., at 10. Animal experimentation and work on the cadaver. Required of fourth-year students. Hertzler.

12.—SURGICAL CONFERENCES. One hour credit. Second semester. Papers on assigned subjects. Required of fourth-year students. Sudler.

13.—ELECTROTHERAPEUTICS. One hour credit. Both semesters, F., at 3, and Sat., at 1. Lectures and demonstrations. Required of fourth-year students. McDermott.

14.—CLINICAL SURGERY. Three hours credit. Both semesters, M. Tu. Th., 8 to 12. Assigned in sections. At St. Margaret's Hospital. Required of fourth-year students. Gray, Nesselrode.

15.—ORTHOPEDIC SURGERY. One hour credit. Both semesters, Sat., at 9. Lectures and recitations. Required of fourth-year students. Schauffier.

16.—CLINICAL SURGERY. One hour credit. First semester. Instruction in the Bell Memorial Hospital. Sudler.

17.—ORTHOPEDIC SURGERY. One hour credit. Both semesters, M. W. Sat., at 1. Instruction in wards at Mercy Hospital, in sections of four. Schauffier.

OTORHINOLARYNGOLOGY.

THIRD YEAR.

1.—RHINOLARYNGOLOGY. One hour credit. Second semester, Th., at 2. The course consists of a review of the anatomy and physiology of the parts, a drill in the use of instruments for diagnosis and in the methods of examination illustrated by demonstrations on patients; also, of lectures, quizzes, and the examination of microscopical specimens. Required of third-year students. Sawtell, Hall, Roberts, McCarty.

2.—OTOLOGY. One hour credit. Second semester, M. S., at 11. The plan of instruction pursued in the study of diseases of the ear is the same as that in the department of nose and throat. Required of third-year students. Sawtell, Hall, Roberts, McCarty.

FOURTH YEAR.

3.—RHINOLARYNGOLOGY. One hour credit. First semester, Th., at 2. This course is a continuation of course 1. Here also the students are taught in groups. The subject matter of this course consists of a study of the deformities and diseases of the nose and throat and their treatment. Required of fourth-year students.

Sawtell, Hall, Roberts, McCarty.

4.—CLINICAL WORK. M. Tu. W. Th. Sat. Clinical instruction in diseases of the ear, nose, and throat is given in the dispensary and by hospital clinics by means of direct examination of patients under the supervision of instructors, who personally teach each student proper methods of examination and the correct interpretation of his observations. Sawtell, Hall, Roberts, McCarty.

OPHTHALMOLOGY.

1.—PHYSIOLOGICAL OPTICS. One hour credit. Instruction is given second-year students in physiological optics; vision tests, color tests, the taking of the field of vision, etc. Optical boxes, artificial eyes, ophthalmoscopes and suitable apparatus are provided for all physiological work and study. The course consists of laboratory work and demonstrations under the professor of physiology in the regular course in physiology.

Curran.

2.—LECTURES, DEMONSTRATIONS, AND CLINICAL WORK IN DISPENSARY. Two hours credit. Both semesters. The course covers objective and subjective examination of the patient, functional testing, diseases, and injuries, medical and surgical ophthalmology, and the relation of the eye to general diseases. Required of third-year students.

Curran.

3.—PRACTICAL WORK. Fourth year. One hour credit. Both semesters. Clinics are given in the Bell Memorial Hospital. The students are divided into small sections and each individual has the opportunity of closely inspecting the patients suffering from external diseases of the eye, of making the commoner applications used in the treatment, of assisting in the operating room, of studying refractive errors, functional testing, etc. Each student is required to become proficient in refraction.

Curran.

TOTAL HOURS OF INSTRUCTION, 838. Anesthetics 9, Minor surgery 36, General surgery 36, Regional surgery 54, Fractures and dislocations 36, Orthopedic surgery 18, Genito-urinary surgery 36, Surgical pathology 54, Operative surgery 144, Surgical diagnosis 36, Surgical conferences 18, Rectal surgery 9, Clinical surgery 144, Amphitheater clinics 144, Ear, nose, and throat 16, Eye 16, Ear, nose, throat, and eye clinics 32.

OBSTETRICS AND GYNECOLOGY.

Professor: GUFFEY.

Associate Professor: IRLAND.

Assistant Professor: VANORDEN.

Dispensary Attendant: SCHWENN.

Instruction in the principles of obstetrics and gynecology is given by means of lectures, recitations, and demonstrations. Clinical instruction is given in the dispensary and wards of the Bell Memorial hospital. Further practical instruction in obstetrics is obtained through the out-patient department.

SECOND YEAR.

1.—PHYSIOLOGICAL OBSTETRICS. Two hours credit. Second semester, M. W., at 1. Lectures and recitations. Required of second-year students.

Ireland.

THIRD YEAR.

2.—PATHOLOGICAL OBSTETRICS. Two hours credit. Fall term, W. S., at 9. Lectures, recitations, and demonstrations. Required of third-year students.

Guffey.

3.—DISEASES OF THE FEMALE GENITAL TRACT. Two hours credit. Second semester, M. Th., at 9. Lectures, recitations, and demonstrations of illustrative pathological material. Required of third-year students.

Guffey.

4.—OPERATIVE OBSTETRICS. One hour credit. Second semester, F., at 1. Recitations, demonstrations, and practice on the manikin by the student. Required of third-year students.

Ireland.

5.—OBSTETRICAL AND GYNECOLOGICAL PATHOLOGY. Two hours credit. First semester, M., 2 to 5. A course devoted to the study of gross and

microscopic pathology with special reference to specimens removed from patients operated upon before the class. Required of fourth-year students. Major, Guffey.

THIRD AND FOURTH YEARS.

6.—DISPENSARY.—One hour credit. A minimum of eighteen hours is required. A course devoted chiefly to history taking, the technique of examination, and the treatment of ambulatory patients. Students assigned in groups. Guffey, Irland, and Vanorden.

7.—PRACTICAL WORK IN OBSTETRICS. The conduct of two births in a hospital and eight on the out-patient service is required before graduation. Assigned work. Guffey, Irland, Vanorden.

FOURTH YEAR.

8.—CLINICAL CONFERENCE IN OBSTETRICS AND GYNECOLOGY. Two hours credit. Both semesters, Th. 3 to 5. An exhaustive consideration of all cases in the Bell Hospital. Also, reports and discussions of case histories and important abnormalities met with in the out-patient service. Required of fourth-year students. Guffey.

9.—CLINICS IN OBSTETRICS AND GYNECOLOGY. Two hours credit. Both semesters, F., 9 to 12. This course logically follows course 6, as the same patients are further examined, given treatment, or operated upon. Students present histories, assist with operations, and make full reports of pathological findings, operative technique, or treatment. Required of fourth-year students. Guffey.

TOTAL HOURS OF INSTRUCTION, 272. Gynecology: didactic 32, clinical 77, laboratory 16, total 115. Obstetrics: didactic 86, clinical 77, laboratory 16; total 179. Total didactic 118, clinical 154, laboratory 32.

TRAINING SCHOOL FOR NURSES.

FACULTY.

FRANK STRONG, Ph. D., President.

S. J. CRUMBINE, M. D., Dean, School of Medicine.

M. T. SUDLER, M. D., Associate Dean, School of Medicine.

S. MILO HINCH, R. N., Superintendent of Bell Memorial Hospital, Supervisor of Nurses.

WILLIAM KIRK TRIMBLE, M. D., Lecturer on Pathology.

RAYMOND W. SWINNEY, A. B., M. D., Instructor in Anatomy.

DON CARLOS GUFFEY, A. M., M. D., Instructor in Medicine and Obstetrics.

CLAUDE FEAGER.

This School was established in July, 1906, with the opening of the Bell Memorial Hospital. It is a division of the School of Medicine of the University of Kansas, and subject to the same governing bodies.

EQUIPMENT.

The present hospital building contains sixty-five beds. The hospital receives all classes of patients except those suffering from dangerous contagious diseases or mental troubles, and shows a great variety of work. Also, since it is a teaching hospital, the character of the work shown is more instructive than that shown ordinarily in private hospitals.

The close proximity of the laboratory, library, and other equipment of the School of Medicine affords great advantage in the way of medical information and instruction.

ADMISSION.

Women of good character between the ages of twenty and thirty are eligible for admission. Those with a high-school education are given preference. Those who are accepted are accepted with the understanding that they must spend a probationary period of three months in the school, during which time they will receive board, laundry, and lodging, but no other compensation, and that they agree to remain in the school, unless dismissed, the full term of three years.

The didactic instruction begins October 1 and ends June 1 of each year, but students are admitted at any time when there is a vacancy.

Any young woman who wishes to enter the school must make formal application to the supervisor of nurses of the Bell Memorial Hospital, Rosedale. With this application should be sent letters showing what educational advantages she has enjoyed, testifying to her good moral character, and to her good health. These letters should preferably be from her instructor and her medical attendant.

ADVANCED STANDING. Candidates for advanced standing must satisfy the requirements for admission and also show that they have had the work already done by the class to which they wish admission. An official statement of character and ability from the training school giving the previous work will be required. There will be required of them, as of beginners, a probationary period, and they will be required to pass an examination on the work for which they seek credit.

COURSE OF STUDY.

The course is for three years. It is customary to grant a vacation of three weeks each year.

The instruction consists of two parts—the practical and the theoretical. The practical work consists of sixty hours' work each week. The theoretical instruction requires four hours of lectures or recitations each

week, together with the necessary laboratory work in dietetics, etc. This theoretical instruction includes the necessary work in anatomy, physiology, hygiene, medicine, pediatrics, obstetrics, etc.

HOURS OF INSTRUCTION.

	<i>Juniors.</i>	<i>Intermediate.</i>	<i>Seniors.</i>
Hygiene and nursing ethics.....	4	..	4
Theory and demonstration—nursing.....	32	32	..
Anatomy and physiology.....	32	..	..
Materia medica	20	..	..
Ward solutions	2	..	..
Urinalysis .....	..	6	..
Bacteriology	16	..	..
Laboratory technic	6	..	..
Obstetrics and Gynecology.....	..	32	..
Chemistry	10	..	..
Pediatrics .....	..	15	..
Surgery .....	..	8	..
Bandaging .....	..	4	..
Dietetics	40	..	..
Nervous diseases .....	..	..	6
Ear, nose, and throat.....	..	..	5
Eye .....	..	..	5
Massage .....	..	..	15
	<hr/> 162	<hr/> 97	<hr/> 35

PROMOTION.

Students are advanced upon the obtaining of satisfactory grades in their practical work and upon their passing satisfactory examinations in their theoretical work. Reports on the practical work are made monthly and those on the theoretical work semiannually.

GRADUATION.

At the close of a successful course of three years the students are granted a diploma under the seal of the University of Kansas. Before they receive such a diploma they must make up lost time and demerits charged against them during the course.

EXPENSES.

Each nurse must furnish her own uniform, books and instruments.* To cover such professional expenses each member of the training school is allowed \$7 a month. From this compensation is deducted, of course, the cost of material unnecessarily broken or lost. Since the board, lodging, and necessary laundry work are furnished free, the pupil nurse secures her training at little or no expenditure of money.

*These instruments consist of 1 hypodermic syringe (all glass), 1 pair of bandage scissors, 1 pair of small scissors, 1 probe, 2 thumb forceps.

SECTION IX.

School of Education.

(331)

FACULTY.

FRANK STRONG, Ph. D., President.
FREDERICK J. KELLY, Ph. D., Dean and Professor of Education.
ARVIN OLIN, A. M., Professor of Education.
EDWIN M. HOPKINS, Ph. D., Professor of Rhetoric and English Language.
ERASMUS HAWORTH, Ph. D., Professor of Geology.
ARTHUR T. WALKER, Ph. D., Professor of Latin Language and Literature.
WILLIAM A. GRIFFITH, Professor of Drawing.
WILLIAM H. JOHNSON, A. M., Professor of Education.
JAMES NAISMITH,* M. D., Professor of Physical Education.
ELMER F. ENGEL, A. M., Professor of German.
ELIZABETH C. SPRAGUE,† Professor of Home Economics.
WILLIAM B. DOWNING, Professor of Public School Music.
RAYMOND A. KENT, A. M., Professor of Education.
FREDERICK R. HAMILTON, Ph. B., Director University Extension Division.
HANNAH OLIVER, A. M., Associate Professor of Latin.
RAYMOND A. SCHWEGLER, A. M., Associate Professor of Education.
ELISE NEUEN SCHWANDER, Ph. D., Associate Professor of Romance Languages.
ULYSSES G. MITCHELL, Ph. D., Associate Professor of Mathematics.
HUBERT W. NUTT, A. M., Associate Professor of Education.
RALPH E. CARTER, A. M., Associate Professor of Education.
EDWIN F. STIMPSON, B. S., Assistant Professor of Physics.
GEORGE W. STRATTON, Ph. D., Assistant Professor of Chemistry.
WILLIAM L. EIKENBERRY,† S. B., Assistant Professor of the Teaching of Biological Sciences.
FRANK E. MELVIN, Ph. D., Assistant Professor of European History.
CORA E. DOLBEE, A. M., Assistant Professor of the Teaching of English.
HAZEL H. PRATT, A. B., Instructor in Physical Education.
CHARLES H. WATSON, Instructor in the Teaching of Physical Sciences.

ADMINISTRATIVE COMMITTEE.

F. J. KELLY, *Chairman.*

A. T. WALKER.

U. G. MITCHELL.

W. H. JOHNSON.

ELIZABETH SPRAGUE.

R. A. SCHWEGLER.

R. E. CARTER.

F. E. MELVIN.

* Absent on leave.

† Absent on leave, second semester

THE SCHOOL OF EDUCATION.

RELATION WITH THE COLLEGE OF LIBERAL ARTS AND SCIENCES.

The School of Education works in intimate relationship with the College of Liberal Arts and Sciences. The academic courses which enter into the preparation of teachers and school administrators are offered by the College, while the professional courses in education are offered by the School of Education.

Two classes of students enroll in the School of Education: First, those who are candidates for the degree of bachelor of science in education, granted by the School of Education; and second, those who are candidates for the University teacher's diploma, granted by the School of Education, and for the degree of bachelor of arts, granted by the College. Students of the first class enroll in the School of Education for all of their work at the beginning of the Junior year at the University. Students of the second class enroll in the College during the entire undergraduate period of their attendance at the University and enroll in the School of Education only for their courses in education. Such students must adjust their College courses, however, so as to meet the requirements of the University teachers' diploma.

RELATION WITH THE KANSAS STATE NORMAL SCHOOLS.

Students with advanced standing from any of the Kansas State Normal Schools entering the School of Education as candidates for the degree of bachelor of science in education will be given credit, hour for hour, for courses in the Normal Schools approved by the joint committee of the Normal Schools and the University. Such students will, of course, complete the specific requirements for the degree. What these courses are may be learned by inquiry either from the Normal School concerned or from the University.

Graduates of the Kansas State Normal Schools whose under-graduate work has been made up of approved courses are admitted without deficiency to the Graduate School of the University as candidates for the degree of master of science in education.

DEGREE IN EDUCATION.

The degree of bachelor of science in education may be granted to students who complete either of the two optional courses prescribed below, provided in the record of scholarship in all the work offered for the degree there are at least as many hours rated B or above as there are hours rated C or below. In this calculation 1 hour rated A is regarded as equivalent to 2 hours rated B, and 1 hour rated D is regarded as equivalent to 2 hours rated C. Also, 1 hour rated I under the former system of grading is to be counted as 1½ hours of B, and 1 hour rated as III under the former system of grading is to be counted as 1½ hours of C.

Courses in the College and the School of Education Required for the Degree of Bachelor of Science in Education.

OPTION I.—FOR SCHOOL SUPERINTENDENTS AND PRINCIPALS.

	Student credit hours.	Reduction by high school work.*	Specific requirements.
English.....	20	15	_____
Public Speaking.....	4	.....	Extempore Speaking.
Foreign Language.....	15	15	_____
Mathematics.....	10	10	_____
Physical Science.....	10	10	From 2 different sciences.
Biological Science.....	10	10	From 2 different sciences.
History and Political Science....	18	10	American Government, 5 hours; and Elementary Law, 3 hours; or Municipal Government, 3 hours.
Economics.....	8	.....	Elements of Economics, 5 hours; and Public Finance, 3 hours; or Elements of Accounting, 3 hours.
Sociology.....	7	.....	Elements of Sociology, 3 hours; and from the following, 4 hours: Social Surveys, 2 hours; Rural Sociology, 2 hours; Municipal Sociology, 2 hours; Social Pathology, 2 hours.
Philosophy and Psychology....	5	.....	General Psychology, 3 hours.
Education.....	30	.....	History of Education, 2½ hours. Educational Psychology, or Psychology of High School Subjects, 2½ hours. Abnormal Child, 2½ hours. Technique of Teaching, 2½ hours. Supervision of Instruction, or City School Administration, 2½ hours. Educational Organization and Administration, or High-school Administration, 2½ hours. Educational Measurements, 2½ hours. School Hygiene, 2½ hours. Elective from all education groups, 10 hours†.
Minor.....	20	.....	_____**
Electives.....			To bring total of College and School of Education hours to 120.

*At rate of 5 hours per high-school unit.

† A teachers' course and senior teaching are required of those without teaching experience.

** See note following Option II.

Courses in the College and the School of Education Required for the Degree of Bachelor of Science in Education.

OPTION II.—FOR TEACHERS.

	Student credit hours.	Reduction by high-school work.*	Specific requirements.
English.....	20	15	_____
Public Speaking.....	2	.....	Extempore Speaking.
Foreign Language.....	20	20	_____
Mathematics.....	10	10	_____
Physical Science.....	10	10	From 2 different sciences.
Biological Science.....	10	10	From 2 different sciences.
History and Political Science...	10	10	_____
Economics.....	5	.....	_____
Sociology.....	5	.....	_____
Philosophy and Psychology...	5	.....	General Psychology, 3 hours.
Drawing.....	3	3	Free-hand Drawing.
Education.....	30	.....	History of Education, 2½ hours. Educational Psychology, or Psychology of High School Subjects, 2½ hours. Technique of Teaching, 2½ hours. Adolescence, 2½ hours. High School Administration, 2½ hours. Social Education, 2½ hours. Teachers' Course and Senior Teaching, 5 hours. Elective from all education groups, 10 hours.
Major.....	25	.....	_____†
Minor.....	15	.....	_____‡
Electives.....			To bring total of College and School of Education hours to 120.

* At rate of 5 hours per high-school unit.

† The minor in Option I and the major in Option II must be chosen from the following departments: English Language and Literature; Latin Language and Literature; Germanic Language and Literature; Romance Language and Literature; Mathematics; Chemistry; Physics and Astronomy; Botany; Zoology; Physiology; History and Political Science; Home Economics.

‡ The minor in Option II may be chosen from the above departments—except that the major and the minor must not be in the same department—or from the following departments: Journalism; Public Speaking; Greek Language and Literature; Entomology; Bacteriology; Anatomy; Geology and Mineralogy; Economics and Commerce; Sociology; Philosophy and Psychology; Physical Education; Design; Music.

UNIVERSITY TEACHERS' DIPLOMA.

The University teachers' diploma is accepted by the State Board of Education and legally qualifies the candidate for the state teachers' certificate. Regular teachers in all four-year high schools in Kansas must have the state certificate, which is granted without examination only to persons completing an approved four-year college course.

On recommendation of the Faculty of the School of Education, the University teachers' diploma may be granted to graduates of the College, and to those receiving degrees from the Graduate School, on the following conditions:

1. Candidates for the University teachers' diploma are required to offer as part of their work:

- (a) Elements of Sociology, 3 hours if taken in the Sophomore year, or 2 hours if taken in the Junior or Senior year.
- (b) Elements of Economics, 5 hours if taken in the Freshman or Sophomore year, or 3 hours if taken in the Junior or Senior year.
- (c) Extempore Speaking, 2 hours.
- (d) Free-hand Drawing, 3 hours (not required if drawing is included among the student's entrance units).
- (e) General Psychology, 3 hours; General Psychology Laboratory, 2 hours.
- (f) Education as follows: History of Education, 2½ hours; Educational Psychology or Educational Theory, 2½ hours; Educational Administration, 2½ hours; one teachers' course; Senior Teaching, 2 hours or 4 hours, according to the facilities for teaching afforded by the training school; additional courses from the three education groups first listed above to make a total of fifteen hours, exclusive of senior teaching.
- (g) A minor. In addition to the College major, a minor of 20 hours in a department approved by the head of the major department. The minor must be outside the major department, but may or may not be in the same group as the major. If in the same group, courses taken as part of the major may also be counted toward the minor.

2. In the record of scholarship in all the work offered for the teachers' diploma (120 hours) there must be at least as many hours rated B or above as there are hours rated C or below. In this calculation 1 hour rated A is regarded as equivalent to 2 hours rated B, and 1 hour rated D is regarded as equivalent to 2 hours rated C. Also, 1 hour rated I under the former system of grading is to be counted as 1½ hours of B, and 1 hour rated as III under the former system of grading is to be counted as 1½ hours of C.

(1) On petition to the Faculty of the School of Education, teachers who have taught successfully in high school may be excused from the course in senior teaching.

(2) Senior teaching and 15 additional hours in education count for credit in the College toward the degree of A. B. or of B. S.

(3) Two and one-half hours in educational psychology or psychology of high-school subjects and two and one-half hours in history of education should be taken before the other required work in education.

Students graduating from the College in 1919 who have met the scholarship requirements will be deemed to have satisfied the requirements for the University Teachers' Diploma when they have completed either of the two following alternatives:

1. (a) Education courses as follows: History of Education, 2½ hours; Educational Psychology or Psychology of High School Subjects, 2½ hours; Educational Administration, 2½ hours; a teachers' course; senior teaching; and additional courses from the three educational groups first listed above to make a total of fifteen hours, exclusive of senior teaching.
- (b) General Psychology, 3 hours, and Psychology Laboratory, 2 hours.
- (c) Elements of Sociology, 3 hours if taken in Freshman or Sophomore year, or 2 hours if taken in the Junior or Senior year.
- (d) Elements of Economics, 5 hours if taken in Freshman or Sophomore year, or 3 hours if taken in the Junior or Senior year.
- (e) Extempore Speaking, 2 hours.
- (f) Free-hand Drawing, 3 hours (not required if drawing is included among the student's entrance units).
2. (a) Education courses as listed above under 1 (a).
- (b) General Psychology, 3 hours.
- (c) A minor as follows: In addition to the College major, a minor of 20 hours in a department approved by the head of the major department. The minor must be outside the major department, but may or may not be in the same group as the major. If in the same group, courses taken as part of the major may also be counted toward the minor.

THE STATE TEACHERS' CERTIFICATE.

Graduates of the University of Kansas must secure a state teachers' certificate from the State Board of Education before they may legally teach in any of the four-year high schools in Kansas. Upon application to the State Board of Education, graduates of the University holding either the degree of bachelor of science in education or the University teachers' diploma are granted the state teachers' certificate without examination.

Also, graduates of the College, who meet the standard of scholarship set for those graduated from the School of Education, who complete the courses in education prescribed by the State Board of Education, will be recommended to the State Board for a certificate.

ADMISSION.

For admission to the School of Education (except for courses 1 and 2, which are open to Sophomores), either of candidates for the degree of bachelor of science in education or of candidates for the University teachers' diploma, the completion of an approved four-year high-school course and at least sixty hours credit of college work in institutions approved by the University, are required. This college work must include General Psychology, 3 hours, and should include Elements of Economics, 5 hours, and Elements of Sociology, 3 hours.

Applicants for admission to the courses in education who are deficient in a small portion of these requirements may be admitted conditionally at the discretion of the Dean.

Admission to Advanced Standing.

Credit for work of collegiate or professional standing is granted only on recommendation of the Advanced Standing Committee.

For regulations governing the granting of such credit see "Admission to Advanced Standing," Section I, page 49.

ADVISERS.

Every student in the School of Education selects the courses for which he enrolls each semester, with the advice and approval of some member of the Faculty, who is called an adviser.

Students who are candidates for or who expect to become candidates for the degree of bachelor of science in education should observe the following suggestions concerning advisers.

Those planning to become superintendents or principals should be advised concerning their courses by Mr. Johnson or Mr. Kent.

Those planning to become teachers of courses in education in high school, normal school or college should be advised by Mr. Olin, Mr. Carter, or Mr. Nutt.

Those planning to become teachers of special classes for subnormal children should be advised by Mr. Schwegler.

Those planning to become teachers of the regular academic subjects in high school, normal school, or college should be advised by the representative of the student's major department who conducts the teachers' course in that department.

Students who are candidates for or who expect to become candidates for the University teachers' diploma should be advised by the head of the student's major department or by some one in the department designated by the head.

BUREAU OF EDUCATIONAL SERVICE.

One of the chief functions of a School of Education in a State University is to render such service as it can in helping the school superintendents and teachers of the state to solve the practical problems which arise in their work. In order to systematize the efforts of the School of Education along this line the Bureau of Educational Service is organized with Professor R. A. Kent as Director. The bureau invites the school people to address it concerning their educational problems of whatever nature. The bureau also offers to lend its aid in carrying on such investigations as those in charge of the public schools wish to conduct. Furthermore, it provides a medium through which the results of educational investigations made anywhere in the state are made most widely available to the rest of the state.

SCHOOLMEN'S CONFERENCE AT THE UNIVERSITY.

The School of Education has in charge the Annual High-school Conference, which meets in March of each year. As a measure of war economy the 1918 meeting has been omitted.

RECOMMENDATION OF TEACHERS.

The University endeavors to assist those of its graduates who desire to teach in securing positions, and at the same time to be of service to high schools, academies, and colleges which may be in need of competent instructors. To this end a representative committee of the Faculty of the School of Education preserves a complete list and record of graduates who are engaged in teaching or have fitted themselves especially for such work. The University authorities are thus prepared at any time to recommend persons who are well qualified for any position as teacher. In so doing great care is exercised, the special qualifications of various teachers for the particular position in hand being in every case fully considered.

Records are kept of every detail of the student's qualifications for teaching, including the estimate of all college professors of the scholarship, personality, strength of character, and general adaptability of the candidate, as well as critical estimates of his teaching ability, indicated by his practice teaching in Oread Training School.

The committee urges members of school boards and school administrators to come to Lawrence in person when possible, so that personal conferences with both University instructors and the candidates for teaching may insure mutual satisfaction and be a guarantee of effective service.

The committee has adopted the policy, in its official recommendations, of attaching special importance to graduate study in the professional preparation of teachers.

EQUIPMENT.

The School has a growing educational museum of considerable value, including ancient and modern textbooks, former and present-day school appliances and equipments, maps and charts, a good deal of which is frequently in use in the Training School. There are over five thousand volumes in the University library classified under the title "Education." This equipment is being greatly augmented through the acquisition of the files of leading French and German educational periodicals and classical treatises. The School of Education makes constant use of the stereopticon and numerous lantern slides, and has a rapidly growing collection of stereographs with stereoscopes for illustrating their proper use in the schools. A special room for this work, fitted up as a dark room, is reserved for use by members of the Faculty of Education.

Forty-five weekly or monthly educational periodicals come to the library. There are complete files of the leading American periodicals and the files of the leading English, French, and German periodicals are being completed. In addition to the usual library facilities, a commodious seminary room and alcove in the reading room of the library are reserved for the use of the several departments within the School of Education. The seminary room is equipped with separate card index system and is under the direction of a trained library attendant.

OREAD TRAINING SCHOOL.

As a laboratory for the science of education there is maintained as a part of the School of Education a typical high school under the name Oread Training School. It is housed in a separate building, which was erected in 1915. The school is designed to exemplify for prospective teachers, and for visiting teachers, principals, and superintendents, the equipment, organization, curriculum, and methods of instruction advocated by the School of Education.

University students with entrance deficiencies may make these up in the school. Any student who has completed the eighth grade in the public schools, or its equivalent, is eligible to admission. Those who have credits for high-school work done elsewhere will be admitted to those advanced courses for which their previous work qualifies them.

GRADUATE POLICY OF SCHOOL OF EDUCATION.

The progressive tendency in many states is to encourage teachers and school administrators to continue in some university advanced study and research in education. The most vital discoveries in this field must finally be made by those on the ground—teachers in active service. This work creates a demand for those who have had training in the methods of investigation and in the interpretation of the data collected.

Upon the basis of an agreement between the University and the Kansas State Normal Schools, graduates of the Kansas State Normal Schools may enter the Graduate School unconditionally (a few courses excepted) as candidates for the degree of master of science in education.

The School of Education provides instruction suited to the needs of graduate students in educational psychology, history and philosophy of education, educational administration, and in the principles of teaching in the various subjects. In accordance with the regulations of the Graduate School, students may pursue, as a major or minor, advanced work in any of these subjects. The master's degree usually requires one year of graduate work; the doctor's degree, three years. Work leading to these higher degrees, with education as a major, is planned in such a way as to afford preparation for responsible positions, particularly those involving administrative and supervisory duties and teaching of education in colleges and normal schools. Graduate work, undertaken with the major in some academic subject and the minor in education, is usually planned in such a way as to afford desirable equipment for the teaching of special branches.

"All work for the higher degrees with education as a major should be planned carefully from the beginning, in consultation with the Dean of the School of Education. Graduate work may be done during any term, including the Summer Session.

PROGRAM OF STUDIES.

The Junior and Senior work in education is organized on the basis of $2\frac{1}{2}$ credit hours per course. Each course extends over a period of nine weeks, and the class meets five days per week. A student is expected to enroll for two courses each semester, one meeting the first nine weeks, the other the second nine weeks, thus equalizing his load for the semester.

DESCRIPTION OF COURSES.

Sophomore Courses.

To meet the demands of the School of Fine Arts, in which certain teacher's certificate requirements are fulfilled in two years of work above high school, and to enable sophomore students in the College, who find it necessary to leave college and begin teaching, to meet the requirements of the State Board of Education for a three-year certificate, courses 1 and 2 are offered by the School of Education. The certificate thus secured is valid only in elementary schools, junior high schools, and two-year high schools, except that those completing the special two-year course in some special subject receive a certificate valid for teaching that subject in any of the high schools of the state. These courses will not be counted for credits toward the University teachers' diploma unless the student has taught at least one year on the certificate which the courses were used to secure.

1.—METHODS OF TEACHING. Three hours credit. Second semester, 10. This course deals with those fundamental principles of method that are most helpful to teachers in the organization and presentation of subject matter. The illustrative materials are taken from a wide range of subjects, but the emphasis is upon the problems that pertain particularly to the elementary schools. Nutt.

2.—ELEMENTARY EDUCATION. Three hours credit. Second semester, 11. The purpose of the course is to give the prospective teacher in elementary schools a general appreciation of the aim, scope, and setting of elementary education and the more necessary information on the internal organization of the elementary school. Kelly.

Junior, Senior, and Graduate Courses.

The following courses are so arranged as to enable students to plan for their advanced work for their Junior year, with reference to three fairly distinct aspects of education: history of education, educational theory and educational administration. One course in history of education (50 or 51) and one course in educational psychology (64), or psychology of high-school subjects (75) should precede all other courses in the School of Education. Advanced credit from other universities or colleges, or from normal schools, will be granted as consideration of the individual cases may warrant. Such students should consult the Dean of the School before enrolling.

HISTORY OF EDUCATION.

50.—HISTORY OF ANCIENT AND MEDIÆVAL EDUCATION. Two and one-half hours credit. First semester, first half, daily, 3; second half, daily, 8. This course is a study of educational principles and practice, systems, and educational theorists among ancient and mediæval people. It includes the important features of Oriental, Greek, Roman, early Christian, and Saracenic education, the Renaissance of learning under Charlemagne, the rise of universities, and the early phases of the Renaissance movement. Olin.

51.—HISTORY OF MODERN EDUCATION. Two and one-half hours credit. First semester, first half, daily, 2; second semester, first half, daily, 8; second half, daily, 3. Doctrines and systems developing from the educational reforms and reformers of the seventeenth century, including

Bacon, Comenius, and other innovators. Decline and restatement of humanism in the eighteenth century, the strengthening of realism, and the institutional development growing out of these changes. The educational evolution of the nineteenth century in Germany, France, England, and America under such leaders as Pestalozzi, Guizot, Arnold, Spencer and Mann. Olin.

59.—EDUCATIONAL CLASSICS I. Two and one-half hours credit. First semester, second half, daily, 3. A critical and historical study of selected dialogues of Plato, and of the educational writings of Locke. An attempt will be made to trace the relation between the opinions of these two writers and the educational theory and practice of the age in which each lived. Olin.

60.—EDUCATIONAL CLASSICS II. Two and one-half hours credit. Second semester, second half, daily, 2. An intensive study in their historical setting of the educational writings of Rousseau and Spencer. Olin.

63.—EDUCATION IN AMERICA. Two and one-half hours credit. Second semester, first half, daily, 9. A study of the origin and development of educational ideas, institutions, and systems in the colonial period; the evolution of the academy, high school, and professional school; the education of girls and women; manual and vocational instruction; and the work of leading educators and theorists: Mann, Willard, Lyon, Howe, Gallaudet, Barnard, Elliot, Harris. Olin.

102.—SEMINAR. Educational systems of Herbart and Froebel. Two hours credit. Second semester, by appointment. Olin.

103.—SEMINAR. Origin and early development of Universities. Two hours credit. Second semester, by appointment. Olin.

EDUCATIONAL THEORY.

54.—EDUCATIONAL CLINIC. Two and one-half hours credit. Second semester, first half, daily, by appointment. By the kindly coöperation of neighboring schoolmen it has been possible to provide for mature students an opportunity for the direct study of typical cases of exceptional mental development. Tests for various mental functions will be demonstrated, and the Binet-Simon, Yerkes-Bridges, and other scales of tests will be used to determine psychic normality. Schwegler.

55.—MENTAL MEASUREMENT OF INDIVIDUAL SCHOOL CHILDREN. Two and one-half hours credit. First semester, second half, daily, 9. A study of the theory and practice of mental measurement. The course deals especially with the problems of mental deficiency, exceptional endowment, and vocational guidance. Schwegler.

64.—EDUCATIONAL PSYCHOLOGY. Two and one-half hours credit. Second semester, first half, daily, 3. Not open to students who have taken course 75. The processes usually treated in general psychology will be considered in their relation to the technique and economy of learning. Habit formation and thought will receive especial attention in their connection with the study of school subjects. Lectures, experiments, reading, and discussion. Carter.

67.—ADVANCED EDUCATIONAL PSYCHOLOGY. Two and one-half hours credit. First semester, second half, daily, 1. A more intensive treatment and more extended application of some of the topics treated in courses 64 and 75. There is opportunity to formulate and use means of revealing the less obvious of the more significant faults of studying in the different high-school subjects. Carter.

68.—THE PRINCIPLES OF EDUCATION. Two and one-half hours credit. Second semester, second half, daily, 9. An analysis of educational norms in theory and practice in the light of the facts of biology, psychology, and sociology. Lectures, library studies, written reports. Schwegler.

69.—TECHNIQUE OF TEACHING. Two and one-half hours credit. First semester, second half, daily, 3. A careful study of the fundamental principles of classroom instruction will be made. The Training School will offer abundant opportunities for demonstrative and illustrative material. The course is designed to supplement the work of teachers' courses and to correlate as much as possible with practice teaching.

Nutt.

71.—THE ABNORMAL CHILD. Two and one-half hours credit. First semester, first half, daily, 9. The growth and development of children are studied with special reference to the nature and causes of arrest as found in backward, defective, and degenerate children. This course is intended for mature students who are preparing themselves for executive positions in town and city schools. Lectures, and visits to various institutions maintained by the state for defective and delinquent children.

Schwegler.

75.—PSYCHOLOGY OF HIGH-SCHOOL SUBJECTS. Two and one-half hours credit. First semester, first half, daily, 8 and 1; second half, daily, 3. second semester, second half, daily, 8. (May be taken instead of course 64 as the state and school requirement in educational psychology, but not open to students who have had course 64.) This course differs from course 64 chiefly in the organization of material. Instead of making the different mental processes the basis of organization for the discussion of learning in the schools, the high-school subjects are treated separately with reference to the mental processes and psychological principles involved.

Carter.

78.—ADOLESCENCE. Two and one-half hours credit. First semester, second half, daily, 10; second semester, first half, daily, 10. A detailed study of the physical, social, and psychological aspects of adolescence. The course will lay special stress on the problems of physical and mental hygiene, as they appear in the physical, intellectual, social, and religious development of the adolescent.

Schwegler.

79.—MORAL EDUCATION. Two and one-half hours credit. Second semester, second half, daily, 10. A critical study of the underlying psychological forces, both conscious and unconscious, which govern the development of habits of thought and action, followed by a review of prevailing systems of moral education.

Schwegler.

100.—SEMINAR IN EDUCATIONAL PSYCHOLOGY. Two hours credit. Both semesters, hours by appointment. Students may spend their time in an intensive study of recent investigations in an educational problem involving psychological principles and methods, or in an actual investigation of such a problem.

Carter.

101.—SEMINAR IN MENTAL DEFECTS. Two hours credit. Both semesters, by appointment. An opportunity for mature students to make a special study of certain forms of irregular mental life frequently met in grade and high-school work.

Schwegler.

EDUCATIONAL ADMINISTRATION.

52.—EDUCATIONAL MEASUREMENTS. Two and one-half hours credit. Second semester, second half, daily, 9. This course involves a consideration of the standards and scales for the measurement of educational attainment, together with the technique of applying these to educational products.

Kelly.

53.—SOCIAL EDUCATION. Two and one-half hours credit. Second semester, second half, daily, 2. The course attempts to show that sociology is coordinate with psychology as a basis for education. It applies social principles and data to school practices just as educational psychology applies psychological principles and data.

Carter.

56.—VOCATIONAL EDUCATION AND GUIDANCE. Two and one-half hours credit. First semester, second half, daily, 2. The development of

vocational education in Europe and America; its organization and administration; the relation of the school system to the various industries of the community; the relation of industrial education to vocational guidance; the consideration of the various theories for the adjustment of educational means to vocational aptitudes. Johnson.

57.—SCHOOL HYGIENE. Two and one-half hours credit. Second semester, first half, daily, 3. The work of this course will be considered under three principal divisions: (1) Schoolroom sanitation; (2) Personal hygiene of school children; (3) Mental hygiene of school children. Nutt.

61.—HIGH-SCHOOL ADMINISTRATION. Two and one-half hours credit. First semester, first half, daily, 10 and 3; second semester, first half, daily, 2; second half, daily, 10. The purpose of this course is to present the practical problems in the administration to the high school. The relationship between school and community and plans for greater coöperation between the school and the home will be discussed. Each member of the class will be expected to make a rather detailed study of some high-school problem in which he is especially interested. Johnson, Kelly.

66.—EDUCATIONAL STATISTICS. Two and one-half hours credit. First semester, first half, daily, 11. A study of statistical method as applied to educational problems. This course dovetails with seminar courses in educational administration, educational psychology, secondary education, and mental defects, in which problems requiring statistical treatment are studied. Kelly.

70.—SCHOOL SURVEYS. Two and one-half hours credit. First semester, first half, daily, 8. A study of the kinds, purposes, methods and results of school surveys. This includes a study of selected parts of standard surveys and a consideration of types of practical survey work possible by regular administrators in ordinary school systems. Open only to experienced public-school administrators. Kent.

72.—SUPERVISION OF INSTRUCTION. Two and one-half hours credit. First semester, second half, daily, 11. Principles and standards of supervision with concrete application of same to actual work observed. Particular attention is given to standard methods of measuring teaching and the teaching product. Open only to those having had teaching experience. Kent.

73.—CITY SCHOOL ADMINISTRATION. Two and one-half hours credit. Second semester, second half, daily, 11. An intensive study of some of the more common and important problems met with in administering a city school system. The problems taken up are studied in the light of scientific principles of educational administration. Kent.

74.—EDUCATIONAL ORGANIZATION AND ADMINISTRATION. Two and one-half hours credit. Second semester, first half, daily, 11. Among the topics discussed are: relation of the national government to education in the states and insular possessions; state administrative organizations; local units of control; school costs and support; material equipment; recent legislation; administrative and supervisory officers; classification and promotion of pupils; period of attendance; physical education and health. Kelly.

77.—PRACTICAL PROBLEMS OF PUBLIC-SCHOOL EDUCATION. Credit to be arranged. Saturday morning at 10, both semesters. The work offered in this course is planned with special reference to the needs of actual teachers and administrators living in the vicinity of Lawrence. Vital problems in school work will be studied and interpreted in the light of modern scientific principles and methods of investigation. The work and the instructors will be arranged when the class first meets.

The amount of credit given will depend upon the work of the individual student.

This course is designed for those teachers and school supervisors who, although in actual service, desire to continue their professional development.

104.—SEMINAR IN EDUCATIONAL ADMINISTRATION. Two hours credit. Both semesters, by appointment. Kelly, Kent, Johnson.

SPECIAL METHODS AND SENIOR TEACHING.

The prerequisites for all teachers' courses are not less than twenty nor more than twenty-five hours in the subject in which the teachers' course is given or in closely allied subjects, two and one-half hours in history of education, and two and one-half hours in educational psychology. All teachers' courses, not including credits for practice, shall be not less than two nor more than four hours in length for one semester, and shall be open to students of Senior and Graduate standing. By permission of the Dean a portion of the work described above as prerequisite may be taken at the same time with the teachers' course, and special mature students under certain conditions, with the approval of the Dean, may take other education courses in lieu of a teachers' course.

The items enumerated below are suggestive of the kinds of topics with which the following teachers' courses in special branches are concerned:

1. A simple statement of the broader aspects of the distinctive field of education, indicating the special adjustment of the moral, æsthetic, social, and practical disciplines to be reasonably expected from a study of the subject.

2. A brief sketch of the actual history of the subject in the school curriculum, showing the gradual change and improvements in the textbook presentations of the subject, and the gradual improvements in other apparatus than textbooks adopted for use in teaching it.

3. The gradual change in the conception of its educational value and the degree and nature of correlation with other subjects, particularly since the report of the Committee of Ten.

4. The growing refinement of methods for presenting the subject.

5. The grade preparation to be presupposed at present, its present status, as seen from a comparison of typical high-school curriculums, together with the social, psychological, and practical obstacles to its attaining its ideal educational aim.

6. The necessary, and also the more ideal, preparation called for in the teacher, academic and professional.

7. References to books and special monographs dealing with the topics of the course, and a suggested list of books desirable for reference for high-school libraries.

In addition to the instruction in the following specialized courses in the theory of teaching, a continuous period of not less than nine weeks and preferably eighteen weeks of supervised teaching should be arranged for by students electing such courses. Exceptional facilities are offered for this teaching in the Oread Training School.

81.—TEACHER'S COURSE IN BIOLOGICAL SCIENCES. Three hours credit. Both semesters, 11. The existing organization of high-school science courses and proposed reorganizations; the place and function of biological science in the high school; the conditions under which biology courses are usually given, and the organization of such courses; the methods, devices, books, and apparatus to accomplish the aims of biology teaching, and the arrangement and equipment of laboratories and classrooms. Lectures, classroom observation, reading demonstrations. It is expected that the student will register for 81 and 81a in the same semester, in order that theory and practice may be closely correlated. Eikenberry.

81a.—SENIOR TEACHING IN BIOLOGICAL SCIENCES. Both semesters, hours to be arranged. Opportunity is offered for teaching in high-school

botany, zoölogy, physiology and agriculture. Should be elected in the same semester with 81. Eikenberry.

99.—TEACHERS' COURSE IN CHEMISTRY. Two hours credit. Second semester, by appointment. Pedagogics and technique of instruction in chemistry in the high school. Stratton.

99a.—SENIOR TEACHING IN CHEMISTRY. Both semesters, hours to be arranged. Stratton.

95.—TEACHERS' COURSE IN DRAWING AND DESIGN. Three hours credit. Prerequisite, courses 54, 51, and 1 in drawing. Griffith.

95a.—SENIOR TEACHING IN DRAWING AND DESIGN. Second semester, hours to be arranged. Griffith.

86.—TEACHERS' COURSE IN ENGLISH. Three hours credit. First semester, 2. The principles of teaching English composition, language, and literature; lectures, reference reading, conferences, visiting of classes and schools, reports, and final thesis. Hopkins.

The prerequisite in English for course 86 are courses 1, 2, 10, 11, 12, 13, 68, 78, and in advanced English composition five hours of any courses from 50 to 57 at option.

86a.—SENIOR TEACHING IN ENGLISH. Both semesters, hours to be arranged. Dolbee.

85.—TEACHERS' COURSE IN GERMAN. Three hours credit. Second semester, 9. Advanced grammar, with theory of language teaching. Intended especially for those who desire to fit themselves for teaching German in high schools. Engel.

85a.—SENIOR TEACHING IN GERMAN. Both semesters, hours to be arranged. Engel.

91.—TEACHERS' COURSE IN HISTORY. Three hours credit. First semester, 1, Tues. and Thurs., third hour by appointment. A study in adapting historical and current social literature to the service of high-school students. High-school courses of study, methods of teaching, textbooks, reference books, and apparatus will be considered. Melvin.

91a.—SENIOR TEACHING IN HISTORY. Both semesters, hours to be arranged. Melvin.

83.—TEACHERS' COURSE IN HOME ECONOMICS. Three hours credit. First semester, 9. The history of the home economics movement, showing the reason for the diverse standards and aims to be found in the work in different schools. Special emphasis will be put on the high-school problem; the ground that should be covered and methods of presentation; the planning of equipment, of courses, and of typical lessons. Sprague.

83a.—SENIOR TEACHING IN HOME ECONOMICS. Both semesters, hours to be arranged. Sprague.

87.—TEACHERS' COURSE IN LATIN. Three hours credit. First semester, 2. The work consists of discussion of the best literature on the aims and methods of teaching Latin, a critical examination of some textbooks used in secondary Latin teaching and a study of some grammatical principles. Walker.

Both the major and the minor in Latin must include college courses 5, 7, 9 and 13. The major must include also courses 10, 50, and either 8 or 51.

87a.—SENIOR TEACHING IN LATIN. Both semesters, hours to be arranged. Oliver.

89.—TEACHERS' COURSE IN MATHEMATICS. Three hours credit. Second semester, 11. It deals with the history, teaching, and mutual relations of the mathematical subjects usually taught in the public schools from the beginning of the seventh grade to the end of the high-school course. This course consists of (1) history of the teaching of mathematics, reading, and lectures; (2) a comparative study of the mathe-

matical curricula of the schools of this country and of Europe; (3) discussions on the best methods of presenting the topics. Open to Seniors and graduates who have completed courses 62 and 7 in mathematics. Mitchell.

89a.—SENIOR TEACHING IN MATHEMATICS. Both semesters, hours to be arranged. Mitchell.

94.—TEACHERS' COURSE IN MUSIC. Downing.

94a.—SENIOR TEACHING IN MUSIC. Downing.

For public-school music course, see bulletin of the School of Fine Arts.

84.—TEACHERS' COURSE IN NORMAL TRAINING. Two and one-half hours credit. First semester, first half, daily, 3. This course will present outlines for psychology and methods courses as they are offered in high schools, discuss textbooks, and cover in detail the problems of teaching that are involved in such courses. Nutt.

82.—TEACHERS' COURSE IN PHYSICAL GEOGRAPHY. Two hours credit. Second semester, 9. The course includes a history of physical geography and physiography in public schools and methods of teaching them, laboratory work and outdoor observations which can be conducted in high schools, meteorological apparatus and weather reports, and best methods of studying land forms and land sculpture with high-school students. Haworth.

82a.—SENIOR TEACHING IN PHYSICAL GEOGRAPHY. First semester, hours to be arranged. Haworth.

97.—TEACHERS' COURSE IN PHYSICAL EDUCATION. Two hours credit. First semester, 9. Laboratory hours by appointment. A study of the principles of play, the classification of games, showing the grade for which each is adapted; and an analysis of the different games, showing the principles involved, and the attributes developed. The methods used in coaching and officiating, the locating, equipping, and organizing of playgrounds. Pratt.

97a.—SENIOR TEACHING IN PHYSICAL EDUCATION. Hours to be arranged. An analysis of gymnastic movements, showing their adaptation to the different grades; and methods of combining these into drills, devising drills for special occasions and to suit varying conditions; organizing and conducting classes; and observation of methods by visitation and practice teaching with selected classes. Pratt.

80.—TEACHERS' COURSE IN PHYSICS. Three hours credit. Second semester, by appointment. Discussion of the proper subject matter of an elementary course in physics, and of the various methods of treating such matter in demonstration, recitation and laboratory. Members of the class will give from time to time demonstrations on assigned topics in elementary physics. Stimpson.

80a.—SENIOR TEACHING IN PHYSICS. Second semester, hours to be arranged. Stimpson.

88.—TEACHERS' COURSE IN ROMANCE LANGUAGES. Three hours credit. First semester, by appointment. Systematic review of grammatical principles from the point of view of the requirements of elementary instruction. Outlines of historical grammar. Study of the methods of teaching languages. Open only to students who give evidence of fitness for the work. Neuen Schwander.

88a.—SENIOR TEACHING IN FRENCH. Both semesters, by appointment. Neuen Schwander.

88b.—SENIOR TEACHING IN SPANISH. Both semesters, by appointment. Neuen Schwander.

SECTION X.

The Summer Session.

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THE FACULTY.

FRANK STRONG, Chancellor of the University and President of the Faculties.

FREDERICK JAMES KELLY, Director of the Summer Session and Professor of Education.

Instructors from Other Institutions.

FRANK GREENE BATES, Ph. D., Associate Professor of Political Science, University of Indiana.

GEORGE HERBERT BETTS, Ph. D., Professor of Psychology and Education, Cornell College, Mount Vernon, Iowa.

MARY WYLIE NICHOLL KERR, A. M., Professor of History and Social Science, College of Emporia, Emporia, Kansas.

WILLIAM LYTLE SCHURZ, Ph. D., Assistant Professor of Latin-American History and Institutions, University of Michigan.

EDWIN H. SUTHERLAND, Ph. D., Professor of Sociology, William Jewel College, Liberty, Missouri.

Instructors from the University of Kansas.

JAMES WOODS GREEN, Professor of Law.

FRANK WILSON BLACKMAR, Dean of the Graduate School, and Professor of Sociology.

CHARLES GRAHAM DUNLAP, Professor of English Literature.

CARL ADOLPH PREYER, Professor of Piano, Counterpoint, Canon, and Fugue.

OLIN TEMPLIN, Professor of Philosophy.

EDWIN MORTIMER HOPKINS, Professor of Rhetoric and English Language.

FRANK HEYWOOD HODDER, Professor of American History.

ARTHUR TAPPAN WALKER, Professor of Latin Language and Literature.

WILLIAM CHASE STEVENS, Professor of Botany.

ARVIN SOLOMON OLIN, Professor of Education.

EUGENIE GALLOO, Professor of Romance Languages and Literature.

WILLIAM LIVESSEY BURDICK, Professor of Law.

CHARLES SANFORD SKILTON, Professor of Organ, Theory of Music and Music History.

WILLIAM HAMILTON JOHNSON, Professor of Education.

HAMILTON PERKINS CADY, Professor of Chemistry.

JOHN SUNDWALL, Professor of Anatomy.

BENNET MILLS ALLEN, Professor of Zoölogy.

EDMUND HOWARD HOLLANDS, Professor of Philosophy.

HENRY WILBUR HUMBLE, Professor of Law.

FRANK BURNETT DAINS, Professor of Chemistry.

ELMER FRANKLIN ENGEL, Professor of German.

- WILLIAM OLIVER HAMILTON, Professor of Physical Education and General Manager of Athletics.
- ARTHUR MACMURRAY, Professor of Public Speaking.
- RALPH H. MAJOR, Professor of Bacteriology and Pathology.
- WILLIAM BELL DOWNING, Professor of Voice.
- RAPHAEL DORMAN O'LEARY, Professor of English.
- RAYMOND ALFRED SCHWEGLER, Professor of Education.
- CHARLES HAMILTON ASHTON, Professor of Mathematics.
- HARRY CONRAD THURNAU, Professor of Germanic Languages and Literatures.
- RAYMOND A. KENT, Professor of Education.
- LEON NELSON FLINT, Professor of Journalism.
- GEORGE ELLETT COGHILL, Professor of Anatomy.
- OLE OLUFSON STOLAND, Professor of Physiology.
- FRANK ESTES KENDRIE, Professor of Violin.
- CLARENCE ADDISON DYKSTRA, Professor of Political Science.
- CARL FERDINAND NELSON, Professor of Physiological Chemistry.
- MARTIN EVERETT RICE, Associate Professor of Physics and Electrical Engineering.
- LOUIS EUGENE SISSON, Associate Professor of Rhetoric.
- HENRY OTTO KRUSE, Associate Professor of German.
- VICTOR EMANUEL HELLEBERG, Associate Professor of Sociology.
- MARGARET LYNN, Associate Professor of English Literature.
- ELISE NEUEN SCHWANDER, Associate Professor of Romance Languages.
- ARTHUR LESLIE OWEN, Associate Professor of Romance Languages.
- HERMAN CAMP ALLEN, Associate Professor of Chemistry.
- CHARLES ALBERT SHULL, Associate Professor of Botany.
- ULYSSES GRANT MITCHELL, Associate Professor of Mathematics.
- HUBERT WILBUR NUTT, Associate Professor of Education and Principal of Oread Training School.
- JOSEPH GRANGER BRANDT, Associate Professor of Greek.
- NOBLE PIERCE SHERWOOD, Associate Professor of Bacteriology.
- HERBERT BAKER HUNGERFORD, Associate Professor of Entomology.
- ELLIS BAYLEY STOUFFER, Associate Professor of Mathematics.
- EDWARD MAURICE BRIGGS, Assistant Professor of German.
- WILLIAM REES B. ROBERTSON, Assistant Professor of Zoölogy.
- PAUL VANCE FARAGHER, Assistant Professor of Chemistry.
- EDMUND DRESSER CRESSMAN, Assistant Professor of Latin.
- GEORGE WEATHERWORTH STRATTON, Assistant Professor of Chemistry.
- WILLIAM MCGLASHAN DUFFUS, Assistant Professor of Economics.
- JOSEPHINE MAY BURNHAM, Assistant Professor of English.
- FRANK E. MELVIN, Assistant Professor of History.
- WILLIAM LEWIS EIKENBERRY, Assistant Professor of Education.
- AMIDA STANTON, Assistant Professor of Romance Languages.
- JOHN JEFFERSON WHEELER, Assistant Professor of Mathematics.
- JOHN ISE, Assistant Professor of Economics.
- JOHN R. FRAZIER, Assistant Professor of Drawing and Painting.
- GORDON LAFAYETTE CRAM, Assistant Professor of Romance Languages.
- CLARENCE ESTES, Assistant Professor of Chemistry.

MAXWELL FERGUSON, Assistant Professor of Economics and Commerce.
EUGENE SMITH, Instructor in Anatomy.
PEARL EMLEY ELLIOTT, Instructor in Piano and Organ.
CORAL IRENE REYNOLDS, Instructor in Voice.
HAZEL HELEN PRATT, Instructor in Physical Education.
ARTHUR JACKSON MIX, Instructor in Plant Pathology.
LITA BATTEY, Instructor in Education.
PAUL BOWEN LAWSON, Instructor in Entomology.
FELIPE MOLINA, Instructor in Romance Languages.
SYBIL WOODRUFF, Instructor in Home Economics.
CORNELIA MITCHELL DOWNS, Instructor in Bacteriology.
ELIZABETH CAMPBELL MEGUIAR, Instructor in Home Economics.
GERTRUDE HAZEN, Instructor in Home Economics.
BESSIE DOUTHITT, Instructor in Zoölogy.
CHARLES H. WATSON, Instructor in Education.
WILLIAM SIDNEY SPICER, Assistant in Anatomy.

THE SUMMER SESSION.

PURPOSE AND PLAN.

1. Students recognize the advantage of reducing their college attendance below the traditional four years, and their attendance at professional schools to as few years as may suffice to complete the course, in order that they may enter into their professional careers as early in life as possible.

2. Persons who are engaged in business, such as salesmanship, banking, insurance, office management, transportation and the like, feel a need for systematic study of their problems.

3. Teachers of all ranks are anxious to improve their professional status.

4. The citizenship of the state in general desires particularly this year the opportunity to learn of the fundamental issues of the war and how each one may best do his part.

The Summer Session is organized to meet the needs of these four classes. It is administered in two separate terms, a six-weeks term and a four-weeks term, for either one of which a student may enroll without enrolling for the other.

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GENERAL INFORMATION.

RECREATION.

The gymnasium and the campus give ample facilities for recreation. On account of its location the gymnasium is always cool and breezy. Such sports as tennis may be played under the protection from the sun. The large floor is used for tennis, volley ball, and basket ball. The first floor is reserved for apparatus work and is always accessible, the men and women having separate gymnasiums. There are seven handball courts, which are available at all hours. Boxing, wrestling and fencing can be done in privacy in the rooms provided for these sports. The shower baths are commodious, and can be regulated to suit the individual. The swimming pool is a most attractive feature of the gymnasium. It is 20 by 50 feet, lined with enameled brick, and well lighted, making it one of the pleasantest in the country. Swimming classes will be organized for women who can not swim.

The Kansas river affords a fine boating course, Potter Lake is convenient for swimming, and McCook field furnishes excellent grounds for football, baseball, tennis, and track events. Nine excellent courts are available for tennis, on McCook field, and five others near the gymnasium. In addition to these, the students at the Summer Session enjoy the folk dances and group games which require neither court nor apparatus. All of these facilities for recreation, except the indoor swimming for women, are free to students.

LECTURES AND ENTERTAINMENTS.

(1) Frequent lectures upon subjects of general interest will be given by members of the faculty and other educational leaders.

(2) The School of Fine Arts will provide occasional musical and literary entertainments, including the work of the regular members of the faculty of the School of Fine Arts. Community singing will be a feature of some of these programs.

SUMMER SESSION OF THE OREAD TRAINING SCHOOL.

Certain high-school classes will be conducted in Oread Training School from June 10 to August 9. Students may take either one or two subjects, reciting in each twice a day. The entire work of a semester will be completed in each subject, thus enabling a student to complete two half-units. The tuition fee will be five dollars whether the student takes one or two subjects.

High-school students who are interested in this opportunity to shorten their high-school attendance or to make up deficiencies are urged to communicate with Principal H. W. Nutt, Oread Training School, as early as possible in order that the subjects offered may accommodate as large numbers as possible.

THE SUMMER SESSION KANSAN.

The Summer Session Kansan is a biweekly college newspaper, edited by the students in journalism. It contains all official and student organization announcements, campus news and notes, editorial comments, etc.

RECOMMENDATION OF TEACHERS.

The University endeavors to assist its own graduates and other properly prepared candidates to secure positions as teachers, and at the same time to be of service to city schools, high schools, academies and colleges which may be in need of superintendents or instructors. To this end the Committee on Recommendations preserves a complete list and

record of all teachers, whether graduates of the University or not, who have studied here long enough to give the University faculty a basis for judging their ability. The University authorities are thus prepared at any time to recommend persons who are well qualified for positions. In so doing, great care is exercised, the special qualifications of various teachers for the particular position in hand being fully considered.

Professor W. H. Johnson is chairman of this committee. All communications regarding teachers should be addressed to him. He is in residence throughout the Summer Session, and will meet all teachers who wish to enroll, as well as superintendents who are looking for teachers.

CORRESPONDENCE-STUDY.

One of the departments of the University Extension Division is the Department of Correspondence-Study. This department and the Summer Session have at least one aim or purpose in common; to furnish instruction in college and university subjects to those persons who for any reason are unable to attend the regular sessions of the University in residence. Combinations of correspondence-study and the residence work of the Summer Session are possible and recommended. Teachers especially, by carrying correspondence work through the winter months and later attending the Summer Session, may accumulate credits toward a degree rapidly and effectively. At the same time the individual's earning power is preserved while he is learning.

COURSES PROVIDED BY THE AMERICAN ASSOCIATION FOR INTERNATIONAL CONCILIATION.

To assist in laying the strongest possible foundations for permanent peace among nations, the American Association for International Conciliation provides for the offering of certain courses in summer sessions in American colleges and universities. The object of the courses is to produce better understanding of other nations, particularly the South American republics, on the part of our people. This year the two courses offered by Professor Schurz, one on Present-day Latin America and the other on the History of the Far East, and the course in the Spanish language offered by Mr. Molina, are provided by the above Foundation. The courses give credit, however, in the departments of history and romance languages, respectively.

SPECIAL WAR COURSES.

Recognizing that students in the Summer Session will be particularly interested in courses designed to help in the better understanding of the war and to afford opportunity better to prepare for our part in it, certain courses have been arranged for credit in the University to meet these ends. Many other courses, though unchanged in name, have been modified in content so as to include information concerning our present national situation. This is particularly true in all the science work. The following courses are especially designed to meet the war situation: European Industry and Commerce of the Nineteenth Century, War Relief and Home Service, Applied Sociology with Reference to Problems of the War, Military Science, Origin of the Great War, Present-day Latin America, and the History of the Far East. It is expected that certain work in engineering will be offered, at the request of the government, to soldiers who will be detailed at the University to prepare for many sorts of technical and semitechnical positions in government service. It is expected also that noncredit courses in home economics will be given to aid in an understanding of the present food situation, and to prepare workers to assist in meeting that situation. Definite plans for all of this work have not yet been received from the government; but the University offers freely its entire equipment to assist in prosecuting the war.

THE SOCIAL DIRECTOR.

The plan introduced in 1917 of having a social director give her time to the social interests of the Summer Session will be carried out again in 1918. Miss Thyrsa Amos will again be the social director. Frequent opportunities for informal getting together will be provided. Parties will be planned perhaps once a week. Office hours will be maintained regularly for purposes of conference upon any matters which the women attending the Summer Session care to bring up. The social director will also interest herself in the proper rooming and boarding conditions of the women in the Summer Session.

ADMISSION.

The classes of the Summer Session are open to all who can satisfy the instructors that their preparation is sufficient to enable them to do the work properly; that is, a student may register in the Summer Session and attend its classes without meeting the requirements for admission which are in force during the regular session, and without paying the five-dollar matriculation fee which is required of all who enter a regular session for the first time. Record of credits will be kept on file but will not be applied toward any degree until the matriculation fee has been paid.

TIME OF BEGINNING WORK.

First Term, June 4 to July 12.

All classes meet on Tuesday, June 4, at the hours scheduled in this catalog. A full hour of work will be given in all departments on the opening day. All students should be in their classes on that day, whether they have registered or not. Regular class work will be done on both Saturday of that week and on Saturday, July 6, but on no other Saturday of the session. Students who enter late will not be permitted to register for the maximum amount of work without special permission of the instructors concerned.

Second Term, July 15 to August 9.

All classes meet on Monday July 15. Those who enter for the second term should have their work planned and their registration completed before that time.

REGISTRATION.

First Term, June 4 to July 12.

The days of registration are Monday, June 3, to Wednesday, June 5, inclusive. Students should pay their fees at the Secretary's office and enroll at the Director's office, room 119, Fraser Hall, as promptly as possible, but late arrivals should not postpone attendance on classes for the sake of registering.

On Thursday, June 6, instructors will receive from the office lists of the students enrolled in their classes. Students whose names do not appear on those lists will not be permitted to attend classes until they have registered.

Second Term, July 15 to August 9.

The days of registration for the second term are July 12 and 13. The procedure outlined for the first term should be followed for the second term, except that those who have been enrolled for the first term will have no fee to pay for the second term.

NATURE OF COURSES.

The courses offered in the Summer Session are for the most part courses which are offered in the regular sessions, or modifications of such courses. Many of the courses have been selected with a view to meeting the wishes of teachers, and certain ones have been modified in some details for the same purpose. But such modifications are not so great as to make the courses unsuitable for students who do not intend to teach.

Regular students of the University must be on their guard against duplicating work. Some of the Summer Session courses, while not exactly equivalent to regular courses, are so nearly equivalent to them that credit will not be given for both. In such cases a warning is given in the statement of the course by the words "nearly =." Students who have had the regular course may not take for credit the Summer Session course. Students who take the Summer Session course will be barred in the future from the regular course.

AMOUNT OF CREDIT.

The normal amount of credit to be obtained in the six-weeks session is five hours; the maximum is six hours. *Under no circumstances will registration for more than six hours credit be permitted in this session.* The amount of credit given for each course is indicated in the statement of that course.

The maximum amount of credit to be obtained in the four-weeks session is four hours. Students who avail themselves of both sessions may thus receive a maximum of ten hours credit for their ten weeks' work—just one-third of a regular year's work.

CREDIT TOWARD DEGREES.

Almost every course offered in the Summer Session gives credit toward one of the University degrees. The statement of each course indicates the amount of credit given for its completion, and the school or schools of the University in which it will be accepted for credit. The special sections of the catalog must be consulted for a complete statement of the degrees conferred by each school, and of the requirements for each degree.

FEES AND EXPENSES.

The fee for Kansas students for the six-weeks term or for both terms together of the Summer Session is ten dollars; for nonresidents fifteen dollars. For the four-weeks term it is half the above. This fee covers admission to all courses except private lessons in music. For certain laboratory courses there is, in addition, the cost of materials.

Lawrence is well provided with boarding houses and restaurants, and a sufficient number of these will continue in operation to supply all demands of the Summer Session. Good board, including room and service, may be had in private families at from \$5 to \$7 per week. The stewards of some of the existing student boarding clubs will remain on the ground and be prepared to carry on their organizations.

A list of rooms and boarding places for men is kept on file in the Registrar's office, and for women in the office of the Social Director. The number of students is so much less in summer than in the regular session that there are an abundance of rooms from which to choose.

DESCRIPTION OF COURSES.

The Summer Session courses offered by each department are numbered consecutively with Roman numerals. Arabic numerals refer to the courses as numbered in the General Catalog for 1917. For example, I (= 2) means that course I of this catalog is identical with course 2 of the General Catalog. I (nearly = 2) means that course I of this catalog is a modification (generally a condensation) of course 2 of the General Catalog.

College students who need freshman and sophomore credits, either to complete the required 60 hours of such work or to complete the requirements of 5 hours in each of 6 groups, must note the Arabic numerals. Only the courses which are numbered from 1 to 49 will satisfy those requirements. Courses numbered 100 and above are strictly graduate courses.

ANATOMY.

(See *Medicine*.)

BACTERIOLOGY.

First Term, June 4 to July 12.

I (= 50).—GENERAL BACTERIOLOGY. Five hours credit in the College.
7:15 to 12. Downs.

II (= 61).—SPECIAL PROBLEMS IN BACTERIOLOGY. Two to six hours,
by appointment. Sherwood.

III (= 50).—MEDICAL BACTERIOLOGY. (See *Medicine*.)

BIOCHEMISTRY.

(See *Medicine*.)

BOTANY.

First Term, June 4 to July 12.

I (= 2).—Five hours credit in the College, or as an entrance unit.
7:30 to 9. Stevens.

II (nearly = 3).—PLANT PHYSIOLOGY. Three hours credit in the Col-
lege. 9 to 10:30. Shull.

III (nearly = 60).—ELEMENTS OF AGRICULTURE. Three hours credit
in the College or the Graduate School. 10:30 to 12. Shull.

IV (= 61).—TREES AND SHRUBS. Three hours credit in the College
or the Graduate School. 9 to 10:30. Stevens.

IV (= 103).—RESEARCH IN PLANT PHYSIOLOGY. Four to six hours
credit in the Graduate School. Shull.

Second Term, July 15 to August 9.

V (nearly = 62).—ELEMENTARY PLANT PATHOLOGY. Four hours credit
in the College or the Graduate School. 7:30 to 12. Mix.

CHEMISTRY.

First Term, June 3 to July 12.

The following courses (except XV) involve laboratory work; the student will therefore report to the instructor in charge and receive his laboratory assignment. He will then pay the fee scheduled at the business office of the University, also a deposit to guarantee the payment of breakage or loss of apparatus, the balance from this deposit to be returned at the end of the term. A coupon book will also be needed to purchase supplies from the storeroom.

I (= 1).—ELEMENTARY CHEMISTRY. Five hours credit in the College or School of Pharmacy, or as an entrance unit. 7:30 to 12. Stratton.

II (= 2).—INORGANIC CHEMISTRY. Four or five hours credit. Five hours credit in the College, School of Pharmacy, Mining or Chemical Engineering courses; four hours credit in the other engineering courses, where less laboratory work is done. 7:30 to 12. Cady.

III (= 3).—QUALITATIVE ANALYSIS. Five hours credit in the College, School of Pharmacy, Mining or Chemical Engineering courses; four hours credit in the other engineering courses. 7:30 to 12. Faragher.

IV (= 54).—QUANTITATIVE ANALYSIS. Two, three or five hours credit in the College of Engineering. 7:30 to 12. Allen.

V (= 108).—GAS ANALYSIS. Two hours credit in the School of Engineering or the Graduate School. By appointment. Allen.

VI (= 52E).—OIL ANALYSIS. Two hours credit in the School of Engineering or the Graduate School. By appointment. Allen.

VII (= 61).—ELEMENTARY ORGANIC CHEMISTRY. Five hours credit in the College, School of Medicine, or School of Pharmacy, but not in the School of Engineering. 7:30 to 12. Prerequisite, ten hours chemistry. Dains.

VIII (= 63).—ADVANCED ORGANIC CHEMISTRY, or (= 163) ORGANIC PREPARATIONS (Advanced). Five hours credit in the College or the Graduate School (63); five hours credit in the Graduate School (163). 7:30 to 12. Dains.

IX (= 165).—ORGANIC CHEMISTRY (RESEARCH). Five hours credit in the Graduate School. 7:30 to 12. Dains.

X (= 70).—PHYSICAL CHEMISTRY I. Five hours credit in the College, School of Engineering or the Graduate School. 7:30 to 12. Prerequisites, course 3, and satisfactory preparation in general physics and calculus. Cady.

XI (= 71).—PHYSICAL CHEMISTRY II. Five hours credit in the College, School of Engineering or Graduate School. Lectures, recitations and laboratory work. 7:30 to 12. Prerequisites, same as for X. Faragher.

Second Term, July 15 to August 9.

XII (nearly = 51).—BEGINNING QUANTITATIVE ANALYSIS. Four hours credit in the College or School of Engineering. 7:30 to 12. Estes.

XIII (= 52D).—FOOD ANALYSIS. Three hours credit in the College or Graduate School. Prerequisite, course 51. 7:30 to 12. Estes.

XIV (nearly = 4).—ELEMENTARY ORGANIC AND SANITARY CHEMISTRY. Four hours credit in the College. 7:30 to 12. Estes.

XV (= 90).—METALLURGY: IRON AND STEEL. Three hours credit in the College, School of Engineering or the Graduate School. 7:30 to 12. Estes.

DRAWING AND DESIGN.*First Term, June 4 to July 12.*

I (= Education 95).—TEACHERS' COURSE IN FREE-HAND DRAWING AND DESIGN. Three hours credit in the School of Education, 7:30 to 10:30. Free-hand drawing, design and its interpretation. Frazier.

II (= 1 in the College, or credit in the School of Fine Arts).—FREE-HAND DRAWING. Three hours credit in the College or School of Fine Arts. 9:30 to 12:30. Frazier.

ECONOMICS AND COMMERCE.*First Term, June 4 to July 12.*

I (nearly = 1).—ELEMENTS OF ECONOMICS. Three hours credit in the College. 7:30 to 9. Ise.

II (nearly = 5 and 6).—EUROPEAN INDUSTRY AND COMMERCE IN THE NINETEENTH CENTURY. Two hours credit in the College. 9 to 10. Ise.

III (= 61).—PUBLIC FINANCE. Three hours credit in the College or Graduate School. 10:30 to 12. *Offered only if six or more students enroll for the course.* Ferguson

IV (nearly = 69).—BUSINESS LAW. Two hours credit in the College or Graduate School. 8 to 9. Prerequisite, course 1. *Offered only if six or more students enroll for the course.* Ferguson.

Second Term, July 15 to August 9.

V (nearly = 4).—COMMERCIAL GEOGRAPHY. Two hours credit in the College. 7:30 to 9. Duffus.

VI (nearly = 81).—MARKETS AND MARKETING. Two hours credit in the College or the Graduate School. 10:30 to 12. Duffus.

EDUCATION.*First Term, June 4 to July 12.*

I (= 51).—HISTORY OF MODERN EDUCATION. Three hours credit in the School of Education or the Graduate School. 7:30 to 9. Olin.

II (= 63).—EDUCATION IN AMERICA. Three hours credit in the School of Education or in the Graduate School. 9 to 10:30. Olin.

III (= 75).—PSYCHOLOGY OF HIGH-SCHOOL SUBJECTS. Three hours credit in the School of Education or in the Graduate School. 9 to 10:30. Nutt.

IV (= 71).—THE ABNORMAL CHILD. Three hours credit in the School of Education or the Graduate School. 9 to 10:30. Schwegler.

V (= 78).—ADOLESCENCE. Three hours credit in the School of Education or the Graduate School. 7:30 to 9. Schwegler.

VI (= 61).—HIGH-SCHOOL ADMINISTRATION. Three hours credit in the School of Education or in the Graduate School. 10:30 to 12. Johnson.

VII (= 56).—VOCATIONAL EDUCATION AND GUIDANCE. Three hours credit in the School of Education or in the Graduate School. 7:30 to 9. Johnson.

VIII (= 68).—PRINCIPLES OF EDUCATION. Three hours credit in the School of Education or in the Graduate School. 10:30 to 12. Kelly.

IX (= 104).—SEMINAR IN EDUCATIONAL ADMINISTRATION. Two to six hours credit in the Graduate School. By appointment. Kelly.

X (= 84).—TEACHERS' COURSE IN NORMAL TRAINING. Three hours credit in the School of Education or the Graduate School. 10:30 to 12. Nutt.

XI (= 80).—TEACHERS' COURSE IN PHYSICAL SCIENCES. Three hours credit in the School of Education or in the Graduate School. 9 to 10:30. Watson.

XII (= 95).—TEACHERS' COURSE IN DRAWING AND DESIGN. (See Drawing and Design.)

XIII (= 86).—TEACHERS' COURSE IN ENGLISH. (See English.)

XIV (= 85).—TEACHERS' COURSE IN GERMAN. (See German.)

XV (= 91).—TEACHERS' COURSE IN HISTORY. (See History.)

XVI (= 97).—TEACHERS' COURSE IN PHYSICAL EDUCATION. (See Physical Education.)

XVII (= 88).—TEACHERS' COURSE IN ROMANCE LANGUAGES. (See Romance Languages.)

Those who desire to take any of the following courses in senior teaching should see Mr. Nutt, principal of Oread Training School, before enrolling: *English, Mathematics, History, Sciences, Modern Languages, and Home Economics.*

Second Term, July 15 to August 9.

XVIII (= 72).SUPERVISION OF INSTRUCTION. Two hours credit in the School of Education or the Graduate School. 7:30 to 9. Kent.

XIX.—THE INTERMEDIATE SCHOOL (Junior High School). Two hours credit in the School of Education or the Graduate School. 9 to 10:30. Kent.

XX (= 52).—EDUCATIONAL MEASUREMENTS. Two hours credit in the School of Education or in the Graduate School. 9 to 10:30. Betts.

XXI.—EDUCATIONAL METHODS. Two hours credit in the School of Education or in the Graduate School. 10:30 to 12. Betts.

XXII (nearly = 81).—TEACHERS' COURSE IN BIOLOGICAL SCIENCES. Two hours credit in the School of Education and in the Graduate School, 9 to 10:30. Eikenberry.

XXIII (= 89).—TEACHERS' COURSE IN MATHEMATICS. (See Mathematics.)

ENGLISH.

First Term, June 4 to July 12.

I (nearly = 76).—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Prose, exclusive of the novel. Two hours credit in the College or the Graduate School. 9 to 10. Dunlap.

II (nearly = 78).—SHAKSPERE. Three hours credit in the College or the Graduate School. 10:30 to 12. Dunlap.

III (= 71).—AMERICAN LITERATURE. Three hours credit in the College or the Graduate School. 7:30 to 9. Hopkins.

IV. SEMINAR IN ENGLISH TEACHING. Two to four hours credit in the Graduate School. 9 to 11. Hopkins.

V (nearly = 81).—BROWNING AND TENNYSON. Three hours credit in the College or the Graduate School. 9 to 10:30. Lynn.

VI (= 11).—ENGLISH LITERATURE. Three hours credit in the College. 7:30 to 9. Lynn.

VII (= 1).—RHETORIC AND COMPOSITION. Three hours credit in the College. 7:30 to 9. Sisson.

VIII (= 12).—HISTORY OF ENGLISH LITERATURE. Three hours credit in the College. 9 to 10:30. Sisson.

IX (= Education 86).—TEACHERS' COURSE IN ENGLISH. Three hours credit in the School of Education or the Graduate School. 9 to 10:30. Battey.

Second Term, July 15 to August 9.

X (= 10).—ENGLISH LITERATURE. Two hours credit in the College. 7:30 to 9. Required for admission to all other courses in English above 11, except in the case of students who offer for entrance a fourth unit in English literature. Burnham.

XI (= 68).—MODERN ENGLISH GRAMMAR. Two hours credit in the College or the Graduate School. 9 to 10:30. Burnham.

XII (= 2).—RHETORIC AND COMPOSITION. Two hours credit in the College. 9 to 10:30. O'Leary.

XIII (= 89).—THE ENGLISH ESSAY. Two hours credit in the College or the Graduate School. 7:30 to 9. O'Leary.

ANNOUNCEMENTS.

For the benefit of students who are candidates for the master's degree, the Department of English announces the following courses as likely to be given, so that intending students may plan their work ahead:

For 1919: Nineteenth Century Poetry; Shakspeare; Methods of Teaching English; American Literature; Literary Criticism; Modern Drama; Old English.

For 1920: English Novel and Shakspeare; American Literature; Old English; English Drama; Methods of Teaching English; Seminar in English.

ENTOMOLOGY.

First Term, June 4 to July 12.

The purpose of the Department in offering courses in the Summer Session is to enable students to take advantage of the opportunity for biologic study of insect life not possible at other times of the year. The Department, therefore, does not repeat in the summer the regular winter courses, but offers courses devoted largely to experimental study of living forms. The work is conducted, in part, as an outdoor study.

I.—FIELD ENTOMOLOGY. Three to six hours credit in the College. A minimum of fifteen to thirty hours a week, part of which will be 10 to 12, the other by arrangement. Hungerford.

II.—ORCHARD AND FOREST INSECT LIFE. Six hours credit in the College or Graduate School. Hungerford.

III.—RESEARCH. Hungerford.

Second Term, July 15 to August 9.

IV.—FIELD ENTOMOLOGY (*Continued*). Four hours credit in the College. Lawson.

V.—RESEARCH (*Continued*). Four hours credit in the College or Graduate School. Lawson.

GEOLOGY.

First Term, June 4 to July 12.

I (= three-fifths of 1).—ELEMENTARY GEOLOGY. Three hours credit in the College. 7:30 to 9. Offered only if six or more students enroll for the course.

II (= 56).—PHYSIOGRAPHY. Three hours credit in the College. 9 to 10:30. Offered only if six or more students enroll for the course.

GERMAN.

First Term, June 4 to July 12.

Ia (= three-fifths of 1).—BEGINNING GERMAN. Three hours credit in the College, School of Fine Arts, or School of Engineering. 7:30 to 9. *Offered only if six or more students enroll for the course.* Engel.

II.—MODERN GERMAN DRAMA. Three hours credit in the College or the Graduate School. 7:30 to 9. Kruse.

III.—GERMANIC MYTHOLOGY, FOLK LORE, AND LEGENDS. Three hours credit in the College or the Graduate School. 9 to 10:30. *Offered only if six or more students enroll for the course.* Kruse.

IV (= Education 85).—TEACHERS' COURSE IN GERMAN. Three hours credit in the School of Education or the Graduate School. 10:30 to 12. Engel.

Second Term, July 15 to August 9.

V (= two-fifths of 1).—BEGINNING GERMAN, Ib (*completed*). Two hours credit. 10:30 to 12. *Offered only if six or more students enroll for the course.* Thurnau.

VI.—GOETHE. Two hours credit in the College or the Graduate School. 7:30 to 9. Thurnau.

VII.—IBSEN IN ENGLISH. Two hours credit in the College or the Graduate School. 9 to 10:30. (*Not offered if course Ib is given.*) Thurnau.

GREEK.

Second Term, July 15 to August 9.

I (nearly = 65).—GREEK POETRY IN TRANSLATION. Two hours credit in the College or the Graduate School. 10:30 to 12. Brandt.

HISTORY.

First Term, June 4 to July 12.

I (= two-thirds Political Science 85).—THE ORIGINS OF THE WAR. Two hours credit in the College or the Graduate School. 9 to 10. Melvin.

II (= two-thirds of 65).—THE AMERICAN REVOLUTION. Two hours credit in the College or the Graduate School. 10 to 11. Hodder.

III (= two-fifths of 67). THE PRELUDE TO THE CIVIL WAR. Two hours credit in the College or the Graduate School. 11 to 12. Hodder.

IV (= Education 91).—TEACHERS' COURSE IN HISTORY. Three hours credit in the School of Education or the Graduate School. 7:30 to 9. Melvin.

V.—SEMINAR IN EUROPEAN AND AMERICAN HISTORY. Three to six hours credit in the Graduate School. Hodder, Melvin.

Second Term, July 15 to August 9.

VI.—PRESENT-DAY LATIN AMERICA. Two hours credit in the College or the Graduate School. 7:30 to 9. Schurz.

VII.—HISTORY OF THE FAR EAST. Two hours credit in the College or the Graduate School. 10:30 to 12. Schurz.

HOME ECONOMICS.

First Term, June 4 to July 12.

I (= 0).—PLAIN SEWING AND GARMENT MAKING. No credit. Three hours laboratory work daily. 9 to 12. It is prerequisite to course 72. Meguiar.

II (= 2).—HOME DECORATION. Two hours credit in the College, 8 to 9. Meguiar.

III (= 72b).—CLOTHING MANUFACTURE. Two hours credit in the College. 9 to 12. Prerequisites, course I (= 0), or equivalent, and 72a. Meguiar.

IV (= 60).—FOOD AND NUTRITION. Three hours credit in the College. 10:30 to 12. Woodruff.

V (= laboratory work of 4).—ECONOMIC USES OF FOOD. Three hours credit in the College. 7 to 10. Fee, \$4. Woodruff.

Second Term, July 9 to August 15.

VI (nearly = 65).—PUBLIC ASPECTS OF THE HOUSEHOLD. Two hours credit in the College. 10:30 to 12. Hazen.

VII (nearly = 52).—SPECIAL PROBLEMS IN FOOD PREPARATION. Two hours credit in the College or Graduate School. 7:30 to 9:30. Hazen.

JOURNALISM.

First Term, June 4 to July 12.

I (nearly = 1).—THE NEWSPAPER—REPORTING, EDITING, EDITORIAL WRITING. Three hours credit in the College. 9 to 10:30. Flint.

II (nearly = 53).—INTERPRETATION OF THE NEWS. Two hours credit in the College. By appointment. Flint.

III (nearly = 51).—MAGAZINE WRITING AND THE SHORT STORY. Two hours credit in the College. 8 to 9. Flint.

NOTE.—For the benefit of teachers of English or newspaper writing who have to deal with the problems of the high-school paper, a weekly round table will be held covering the methods of developing and utilizing the newspaper in the school—its value as an outlet for student production and as an interpreter of the school to the public.

LATIN.

First Term, June 4 to July 12.

I.—PREPARATORY LATIN COMPOSITION. No credit. 10 to 11.

Cressman.

II (= 13 or 50).—LATIN COMPOSITION. Two hours credit; as 13, in the College; as 50, in the College or the Graduate School. 8 to 9.

Cressman.

III.—GENERAL LINGUISTICS. Two hours credit in the College or the Graduate School. 9 to 10.

Cressman.

IV.—THE SYNTAX OF THE LATIN VERB. Two hours credit in the College or in the Graduate School. 11 to 12.

Walker.

V (= part of 106).—INVESTIGATION IN LATIN SYNTAX. Two or more hours credit in the Graduate School. 10 to 11.

Walker.

Second Term, July 15 to August 9.

VI.—CÆSAR AND THE SENATE (49-44 B. C.). Two hours credit in the College or the Graduate School. 9 to 10:30.

Brandt.

LAW.

First Term, June 4 to July 12.

The courses in law in the Summer Session are designed to assist those who do not have the requisite credits in law to entitle them to enroll regularly in either the Middle or Senior classes of the School of Law, or who desire to shorten the actual time required to complete the three-year course of study. A course has been arranged which will enable a person who enroll in the Summer Session to graduate after attending three summer and two regular sessions of the University, providing he has previously completed the preparatory work required for entrance to the Law School, as laid down in the General Catalog.

Note that those who wish to take advantage of this arrangement should begin their University residence in the summer, not in the fall.

Any two of the following courses may be taken by the student upon satisfying the instructor of his preparation to undertake the work. It is intended, however, that those who wish to complete the course in the School of Law in three summer and two regular sessions shall study criminal law and torts in the first Summer Session, agency and insurance in the second Summer Session, and partnership and wills in the third Summer Session. During the regular sessions the student will pursue the course of study in the order stated in the General Catalog of the University for students enrolled in the Summer Session course.

I.—CRIMINAL LAW. 9 to 10:30. *Offered only if six or more students enroll for the course.* Burdick.

II.—TORTS. 7:30 to 9. *Offered only if six or more students enroll for the course.* Green.

III.—AGENCY. 9 to 10:30. *Offered only if six or more students enroll for the course.* Green.

IV.—INSURANCE. 7:30 to 9. Open only to students who have had contracts. Humble.

V.—WILLS. 7:30 to 9. *Offered only if six or more students enroll for the course.* Burdick.

VI.—PARTNERSHIP. 9 to 10:30. Humble.

MATHEMATICS.

First Term, June 4 to July 12.

I (= 1).—SOLID GEOMETRY. Two hours credit in the College, required for entrance to the School of Engineering. 10 to 11. Wheeler.

II (= 2).—COLLEGE ALGEBRA. Three hours credit in the College. 7:30 to 9. Ashton.

III (= 3).—PLANE TRIGONOMETRY. Two hours credit in the College. 9 to 10. Wheeler.

IV (= 4).—ANALYTICAL GEOMETRY I. Two hours credit in the College. 8 to 9. Wheeler.

V (= 5).—CALCULUS I. Three hours credit in the College. 9 to 10:30. Open to undergraduates who have completed or are taking course IV. Stouffer.

VI (= 50).—ANALYTIC MECHANICS. Three hours credit in the College or the Graduate School. 9 to 10:30. Ashton.

VII (= 59).—MODERN GEOMETRY I. Three hours credit in the College or the Graduate School. 7:30 to 9. Stouffer.

Second Term, July 15 to August 9.

VII (nearly = 62).—HISTORY OF ELEMENTARY MATHEMATICS. Two hours credit in the College or the Graduate School. 7:30 to 9. Mitchell.

IX (nearly = Ed. 89).—TEACHERS' COURSE IN MATHEMATICS. Two hours credit in the School of Education or the Graduate School. 9 to 10:30. Mitchell.

MEDICINE.

First Term, June 4 to July 12.

ANATOMY.

Courses I, II, III, and IV are required of medical students. Atlases and textbooks are used as guides. The work in the laboratory is as independent as possible. Drawings and notes supplement the dissections. Quizzes are given by instructors on parts as completed. Credit is given only upon the completion of the work outlined and the passing of final

examinations, both written and practical. Each course is supplemented by lectures bearing on the practical phases of the dissection.

I (= 1).—DISSECTION OF THE ARM AND THORACIC WALL. Three hours credit. Sundwall.

II (= 2).—DISSECTION OF THE LEG, PERINEUM AND ABDOMINAL WALL. Three hours credit. Sundwall.

III (= 3).—DISSECTION OF THE THORACIC AND ABDOMINAL VISCERA. Three hours credit. Sundwall.

IV (= 4).—DISSECTION OF THE HEAD AND NECK. Three hours credit. Sundwall.

For the above four courses: Lectures, 8 a. m.; laboratory from 9 a. m., throughout the day. Laboratory fees, \$5 per course.

V (= 6).—TOPOGRAPHICAL ANATOMY. Three hours credit in the School of Medicine. Lectures daily, 9 a. m.; laboratory daily, from 10 a. m. throughout the day. Laboratory fees, \$5. Sundwall.

VI (= 11).—ADVANCED WORK IN ANATOMY. Credits, hours and fees to be arranged. Sundwall.

Courses 1, 2, 3 and 4 are designed for medical students.

Course 6 is designed for those who wish to make a complete review of anatomy. Special emphasis will be laid on the practical side.

Course 11 is particularly designed for those who wish to specialize in some branch of medicine. In taking up a specialty a thorough knowledge of the organs and parts concerned is of fundamental importance. This course ought to appeal to physicians contemplating going away for special training, as the structures can be as readily worked out here as elsewhere, thus saving time and expense.

VIIa.—HISTOLOGY. Lectures and laboratory work upon the cell and the tissues. Three hours credit in the College or in the School of Medicine, 9 to 10:30 a. m., with 60 additional hours of laboratory work to be arranged by consultation with the instructor. Prerequisite: Ten hours of biology. Coghill.

VIIb.—SPANCHNOLOGY. Two hours credit in the College or in the School of Medicine, 9 to 11. Prerequisite, Course VIIa.

Course VIIa and VIIb are the equivalent of Anatomy VII (Histology and Spanchnology) of the College of Medicine. Coghill.

VIII (= 8).—EMBRYOLOGY. Two hours credit in the School of Medicine, 11 to 12; with 36 additional hours of laboratory work to be arranged by conference with the instructor. Prerequisite, course 7.

Coghill and assistants.

IX (= 9).—INTRODUCTORY NEUROLOGY. Three hours credit in the College, 7:30 to 9. This course is not accredited in the Medical School, but with certain modifications; arranged by the instructors for individual cases, it may be substituted for the regular course in neurology in the Medical School. Coghill.

BACTERIOLOGY.

X (= 50).—MEDICAL BACTERIOLOGY. Five hours credit in the School of Medicine. 7:15 to 12. Sherwood.

BIOCHEMISTRY.

XI (= 50).—BIOLOGICAL CHEMISTRY. Six hours credit in the School of Medicine. Lectures and conferences daily, 8 to 9:30; laboratory work daily, 9:30 to 12, Monday, Tuesday, Wednesday, and Thursday afternoons, 1 to 4. Nelson.

PATHOLOGY.

The following courses to be conducted at Rosedale, will be offered if an enrollment of at least six students giving full time to study obtains at the opening of the summer session:

XII.—GENERAL PATHOLOGY. (At Rosedale.) Five hours credit. Daily, 8 to 12 a. m. Major.

XIII.—SPECIAL PATHOLOGY. (At Rosedale.) Two hours credit.

Major.

XIV.—POST-MORTEM PATHOLOGY. (At Rosedale.) Three hours credit.
Assigned work.

Major.

XV.—ADVANCED BACTERIOLOGY AND PATHOLOGY. (At Rosedale.) Open
to advanced students who have had sufficient preparation.

Major.

Second Term, July 15 to August 9.

XVI.—DISSECTION 1, 2, 3, and 4 (continued).

Smith.

XVII.—HISTOLOGY AND SPLANCHNOLOGY (continued).

Spicer.

MUSIC.

First Term, June 4 to July 12.

The Summer Session work in music will be under the direction of Associate Dean Preyer. The department offers courses in piano under Associate Dean Preyer and Assistant Professor Emley-Elliott; in voice under Professor Downing and Miss Reynolds; in organ under Professor Skilton and Mrs. Emley-Elliott; in violin under Professor Kendrie; in public-school music under Professor Downing; in theory under Professor Skilton and Professor Kendrie; in history of music under Professor Skilton; in sight singing and ear training under Professor Downing and Miss Reynolds.

Description of Courses.

The following theoretical subjects may be taken without an additional fee:

PUBLIC-SCHOOL MUSIC.

I (= 1).—TEACHING OF MUSIC IN GRADES 1, 2, 3 AND 4. Two hours credit.

General Pedagogical Problems.

Downing.

II (= 2).—TEACHING OF MUSIC IN GRADES 5, 6, 7 AND 8. Two hours credit. Continuation of I.

Downing.

III (= 3).—TEACHING OF MUSIC IN HIGH SCHOOLS. Two hours credit.
General Pedagogical Problems.

Downing.

SIGHT SINGING AND EAR TRAINING.

I (= 1, 2).—ELEMENTARY SIGHT SINGING AND EAR TRAINING. One hour credit.

Reynolds.

II (= 3, 4).—ADVANCED SIGHT SINGING AND EAR TRAINING. One hour credit.

Downing.

MUSIC THEORY.

I (= 52).—HARMONY. Two hours credit in the College or in the School of Fine Arts.

Kendrie.

II (= 53).—HARMONY. Two hours credit in the College or in the School of Fine Arts.

Kendrie.

III (= 54).—HARMONY. Two hours credit in the College or the School of Fine Arts.

Skilton.

HISTORY OF MUSIC.

I (= 51).—DEVELOPMENT OF MUSIC. Two hours credit in the College or in the School of Fine Arts.

Skilton.

PIANO, VOICE, VIOLIN, ORGAN.

Courses in piano, voice, violin and organ are offered by the Department of Music with the following credits in the School of Fine Arts. No credit will be allowed for less than two lessons and eight hours practice each week.

PIANO. One hour credit for two lessons and eight hours practice each week. (Additional credit may be had for additional practice, by consulting Associate Dean Preyer.)

VOICE. One hour credit for two lessons and eight hours practice each week.

VIOLIN. One hour credit for two lessons and eight hours practice each week. (Additional credit may be had for additional practice, by consulting Professor Kendrie.)

ORGAN. One hour credit for two lessons and eight hours practice each week. (Additional credit may be had for additional practice, by consulting Professor Skilton.)

TUITION RATES.

Students paying the Regular Summer Session fee may take any of the theoretical courses, taught in classes, for which they are prepared.

Kansas students taking two lessons a week and paying not less than \$12 in special fees, or nonresident students taking two lessons a week and paying not less than \$18 in special fees, may take any of the theoretical music subjects or any other regular courses offered in the Summer Session without paying the regular Summer Session fee.

FEES FOR PRIVATE LESSONS FOR THE SIX-WEEKS TERM.

Private lessons in piano with Associate Dean Preyer:

One half-hour lesson a week.....	\$12.00
Two half-hour lessons a week.....	24.00

Private lessons in organ with Professor Skilton:

One half-hour lesson a week.....	\$12.00
Two half-hour lessons a week.....	24.00

Private lessons in voice with Professor Downing:

One half-hour lesson a week.....	\$12.00
Two half-hour lessons a week.....	24.00

Private lessons in violin with Professor Kendrie:

One half-hour lesson a week.....	\$9.00
Two half-hour lessons a week.....	18.00

Private lessons in piano or organ with Mrs. Emley-Elliott:

One half-hour lesson a week.....	\$6.00
Two half-hour lessons a week.....	12.00

Private lessons in voice with Miss Reynolds:

One half-hour lesson a week.....	\$6.00
Two half-hour lessons a week.....	12.00

Organ practice at local churches, \$2 to \$3 a month for one hour daily.

Piano may be rented at private houses or at the music dealers.

Special students in piano, voice or organ may be admitted to the Summer Session by obtaining the permission of the Dean of the School of Fine Arts, and by paying the special fees stated above.

RECITALS.

The Faculty of the School of Fine Arts will give a recital each week of the first-term session. The students in music will give fortnightly recitals.

"Community sings," conducted by Dean Butler and Professor Downing, will be features of the first-term session.

PHILOSOPHY AND PSYCHOLOGY.

First Term, June 4 to July 12.

I (= 1a).—GENERAL PSYCHOLOGY. Three hours credit in the College.
9 to 10:30. Hollands.

II (= 1b).—GENERAL PSYCHOLOGY LABORATORY. Two hours credit in
the College. 10:30 to 12:30. Hollands.

III (= two-thirds of 50.)—ATTENTION AND LEARNING. Two hours credit in the College or the Graduate School. 11 to 12. Should be preceded by I and II above. Hollands.

Second Term, July 15 to August 9.

IV (= 11).—INTRODUCTION TO PHILOSOPHY. Two hours credit in the College. 9 to 10:30. Templin.

V (= 81).—PRACTICAL ETHICS. Two hours credit in the College or in the Graduate School. 10:30 to 12. Templin.

PHYSICAL EDUCATION.

First Term, June 4 to July 12.

I.—PRINCIPLES OF COACHING—TRACK ATHLETICS. No credit. 2 to 3. Hamilton.

II.—PRINCIPLES OF COACHING—BASKETBALL. No credit. 3 to 4. Hamilton.

III (= 57).—PRINCIPLES OF RECREATIVE SPORTS AND GAMES FOR WOMEN. Two hours credit in the College. 11 to 12. Practice hours to be arranged. Pratt.

IV (= Ed. 97).—TEACHERS' COURSE IN PHYSICAL EDUCATION. Two hours credit, in the School of Education. 1 to 2. Practice hours to be arranged. Pratt.

V.—SWIMMING. (Women.) Class instruction 2:30 to 4:30 daily. A fee of one dollar will be charged.

VI.—FOLK DANCING.

A.—For beginners (open to any student in the Summer School).

Pratt.

B.—For advanced students.

Pratt.

VII.—MILITARY SCIENCE I. Two hours credit in the College, School of Engineering, and other schools by permission. 10 to 11. Briggs.

VIII.—MILITARY SCIENCE II. Two hours credit in the College, School of Engineering, and other schools by permission. 11 to 12. Briggs.

PHYSICS.

First Term, June 4 to July 12.

I (= 5a).—GENERAL PHYSICS I. Mechanics, sound and light. Three hours credit in the College or the Engineering School. 7:30 to 9. Rice.

II (= 6a).—GENERAL PHYSICS II. Heat and electricity. Three hours credit in the College or the Engineering School. (Not offered in 1918.)

III (= 5b).—GENERAL PHYSICS LABORATORY I. Mechanics, sound, and light. Two hours credit in the College or the Engineering School. 9 to 11 (may be arranged 9 to 10 or 10 to 11, the other hour by appointment). Course III must be preceded by or accompanied by I or its equivalent. Rice.

IV (= 6b).—GENERAL PHYSICS LABORATORY II. Heat and electricity. Two hours credit in the College or the Engineering School. 9 to 11 (may be arranged 9 to 10 or 10 to 11, the other hour by appointment). Rice.

V (= 107).—RESEARCH AND THESIS. Three to six hours credit in the Graduate School. By appointment. Rice.

PHYSIOLOGY.*First Term, June 4 to July 12.*

I (= 1).—ELEMENTARY PHYSIOLOGY. Five hours credit in the College, 7:30 to 12. Stoland.

II (= 60).—ADVANCED PHYSIOLOGY. Three to six hours credit in the College. By appointment. Stoland.

III (= 63 or 100).—SPECIAL PROBLEMS, OR RESEARCH IN PHYSIOLOGY. Three to six hours credit in the College or the Graduate School. By appointment. Stoland.

POLITICAL SCIENCE.*First Term, June 4 to July 12.*

I (= 10).—AMERICAN GOVERNMENT. Three hours credit in the College. 9 to 10:30. Dykstra.

II (= 84).—MUNICIPAL GOVERNMENT. Three hours credit in the College or the Graduate School. 10:30 to 12. Dykstra.

Second Term, July 15 to August 9.

III (= 87).—STATE GOVERNMENT. Two hours credit in the College or the Graduate School. 7:30 to 9. Bates.

IV (= 90).—SOCIAL POLITICS. Two hours credit in the College or the Graduate School. 9 to 10:30. Bates.

PUBLIC SPEAKING.*First Term, June 4 to July 12.*

I (= 1).—ORAL INTERPRETATION. Two hours credit in the College. 8 to 9. MacMurray.

II (= 50).—EXTEMPORE SPEAKING. Two hours credit in the College. 9 to 10. MacMurray.

III (= 60).—DRAMATIC ART. Two hours credit in the College. 10 to 11. MacMurray.

ROMANCE LANGUAGES.*First Term, June 4 to July 12.*

I (= three-fifths of 1; or, with additional work, of 51).—ELEMENTARY FRENCH. Three hours credit in the College, School of Engineering, School of Fine Arts; or an entrance unit if completed by IX of the second term. 9 to 10:30. Galloo.

II (= three-fifths of 2; or, with additional work, of 52; or, with more difficult reading, = 3).—FRENCH READING. Three hours credit in the College, School of Engineering, School of Fine Arts; or an entrance unit if completed by X of the second term. 10:30 to 12. Stanton.

III (= 4 and one-third of 9).—FRENCH COMPOSITION AND CONVERSATION. One, two, or three hours credit in the College, School of Engineering, or School of Fine Arts; three hours credit, 9 to 10:30; two hours credit, 9 to 10, for students electing 4 only; one hour credit, 10 to 10:30, for students electing 9 (the conversation) only. Neuen Schwander.

IV (= 57).—THE ROMANTIC SCHOOL. Two or three hours credit in the College or Graduate School, 10:30 to 11:30, or 10:30 to 12. Galloo.

V (= three-fifths of 21; or, with additional work, of 71).—ELEMENTARY SPANISH. Three hours credit in the College, School of Engineering, School of Fine Arts; or an entrance unit if completed by XI of the second term. 9 to 10:30. Owen.

VI (= three-fifths of 22; or, with additional work, of 72).—SPANISH READING AND GRAMMAR. Three hours credit in the College, School of

Engineering, or School of Fine Arts; or an entrance unit if completed by XII of the second term. 9 to 10:30. Stanton.

VII (= 24 and one-third of 27).—SPANISH COMPOSITION, CONVERSATION AND ADVANCED GRAMMAR. One, two, or three hours credit in the College, School of Engineering, or School of Fine Arts; three hours credit, 7:30 to 9; two hours credit 8 to 9, for students electing 24 only; one hour credit, 7:30 to 8, for students electing 27 (the conversation) only. Owen.

VIII (= Education 88).—TEACHERS' COURSE IN ROMANCE LANGUAGES. Three hours credit in the College, the School of Education, or the Graduate School; or, if taken in conjunction with course I or course V, five hours credit. 10:30 to 12. Neuen Schwander.

Second Term, July 15 to August 9.

IX (= two-fifths of 1; or, with additional work, of 51).—ELEMENTARY FRENCH, *completed*. Two hours credit in the College, School of Engineering, or School of Fine Arts, thus making with I a five-hour credit in French 1 or 51, or an entrance unit. 9 to 10:30. Cram.

X (= two-fifths of 2; or, with additional work, of 52).—FRENCH READING AND GRAMMAR, *completed*. Two hours credit in the College, School of Engineering, or School of Fine Arts, thus making with II a five-hour credit in French 2 or 52, or an entrance unit. 10:30 to 12. Cram.

XI (= two-fifths of 21; or, with additional work, of 71).—ELEMENTARY SPANISH, *completed*. Two hours credit in the College, School of Engineering, or School of Fine Arts. 9 to 10:30. Molina.

XII (= two-fifths of 22; or, with additional work, of 72).—SPANISH READING AND GRAMMAR, *completed*. Two hours credit in the College, School of Engineering, or School of Fine Arts, thus making with VI a five-hour credit in Spanish 22 or 72, or an entrance unit. Molina.

SOCIOLOGY.

First Term, June 4 to July 12.

I (= 50).—ELEMENTS OF SOCIOLOGY. Two hours credit in College or Graduate School. 8 to 9. Lectures and library work. Sutherland.

II (nearly = 63).—SOCIAL SURVEYS. Two hours credit in the College or Graduate School, 10 to 11. Sutherland.

III (nearly = 60).—RURAL SOCIOLOGY. Two hours credit in the College or the Graduate School. 11 to 12. Sutherland.

IV (nearly = 51).—APPLIED SOCIOLOGY. Two hours credit in College or Graduate School. 8 to 9. Blackmar.

V (nearly = 70).—WAR RELIEF AND HOME SERVICE. Two hours credit in the College or the Graduate School. 9 to 10. Blackmar.

VI.—SEMINAR OF SOCIAL INVESTIGATION. Two to six hours credit in the Graduate School. By appointment. Blackmar.

Second Term, July 15 to August 9.

VII (nearly = 55).—PSYCHOLOGICAL SOCIOLOGY. Four hours credit in the College or Graduate School. 7:30 to 12. Helleberg.

VIII (nearly = 52).—SOCIAL PATHOLOGY. Two hours credit in the College or Graduate School. 9 to 10:30. Kerr.

IX (nearly = 53).—REMEDIAL AND CORRECTIVE AGENCIES. Two hours credit in the College or Graduate School. 10:30 to 12. Kerr.

X.—SEMINAR OF SOCIOLOGY. Two to four hours credit in the Graduate School. By appointment. Helleberg.

ZOOLOGY.

First Term, June 4 to July 12.

The summer is an especially favorable time for the study of zoölogy. Much attention will be given to study of living animals, both in the laboratory and in the field. Frequent excursions will be made for purposes of field observation. This is especially true of the courses in elementary zoölogy and ornithology.

I (= 1).—ELEMENTARY ZOÖLOGY. A study of animal life. Two, three or five hours credit in the College. Lectures 10:30 to 12; laboratory, 8 to 10:30. Fee, \$2.50. Allen, Douthitt.

II (= 51).—ORNITHOLOGY. Bird life of Kansas. Three hours credit in the College or in the Graduate School. 7:30 to 8:30, and field work by appointment. Fee, \$1.50. Douthitt.

III (= 3).—COMPARATIVE ANATOMY. Five hours in the College. Lectures, 7:30 to 8:30; laboratory 8:30 to 11:30. Fee, \$3.50.

IV.—BIOLOGICAL SURVEY. Three or six hours credit in the College or Graduate School. Allen.

V (= 73 or 100).—RESEARCH. By appointment. Allen.

Second Term, July 15 to August 9.

VI (= 64).—HEREDITY IN RELATION TO EUGENICS. Two hours credit in the College or Graduate School. 7:30 to 9. Robertson.

VII (nearly = 54).—CYTOLOGY. Four hours credit in the College or Graduate School. 7:30 to 12. Fee, \$3.50. Robertson.

VIII (= 73 or 100).—RESEARCH. Robertson.

SECTION XI.

University Extension Division.

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THE FACULTY.

FRANK STRONG, Ph. D., Chancellor of the University.

FREDERICK R. HAMILTON, A. M., Director of University Extension Division.

HAROLD G. INGHAM, A. B., Secretary of Correspondence-Study Department.

EDGAR H. S. BAILEY, Ph. D., Professor of Chemistry and Metallurgy.

ALEXANDER M. WILCOX, Ph. D., Professor of Greek Language and Literature.

LUCIUS E. SAYRE, Ph. M., Professor of Pharmacy.

FRANK W. BLACKMAR, Ph. D., Professor of Sociology.

CHARLES G. DUNLAP, Litt. D., Professor of English Literature.

EDWIN M. HOPKINS, Ph. D., Professor of Rhetoric and English Language.

FRANK H. HODDER, Ph. M., Professor of American History and Political Science.

ERASMUS HAWORTH, Ph. D., Professor of Geology and Mineralogy.

ARTHUR T. WALKER, Ph. D., Professor of Latin Language and Literature.

WILLIAM C. STEVENS, M. S., Professor of Botany.

ARVIN S. OLIN, A. M., LL. D., Professor of Education.

EUGENIE GALLOO, A. M., Professor of Romance Languages and Literatures.

IDA H. HYDE, Ph. D., Professor of Physiology.

SAMUEL J. HUNTER, A. M., Professor of Entomology.

PERLEY F. WALKER,¹ M. M. E., Professor of Mechanical Engineering.

L. D. HAVENHILL, Ph. M., Professor of Pharmacy.

FREDERICK E. KESTER, Ph. D., Professor of Physics.

GEORGE C. SHAAD, B. S., E. E., Professor of Electrical Engineering.

SAMUEL J. CRUMBINE, M. D., Professor of Preventative Medicine.

HERBERT A. RICE, C. E., Professor of Civil Engineering.

BENNET M. ALLEN, Ph. D., Professor of Zoölogy.

EDMUND H. HOLLANDS, Ph. D., Professor of Philosophy.

GOLDWIN GOLDSMITH, Ph. B., Professor of Architecture.

CLEMENT C. WILLIAMS,¹ B. S., C. E., Professor of Railway Engineering.

ELMER F. ENGEL, A. M., Professor of German.

JOHN N. VAN DER VRIES,² Ph. D., Professor of Mathematics.

WILLIAM O. HAMILTON, A. B., Professor of Physical Education and Director of Athletics.

ARTHUR MACMURRAY, A. B., M. O., Professor of Public Speaking.

ELIZABETH C. SPRAGUE,² Professor of Home Economics.

RAYMOND A. SCHWEGLER, A. M., Professor of Education.

1. On leave for military service.

2. On leave for war work, second semester.

- ARTHUR J. BOYNTON, A. M., Professor of Economics.
ARTHUR C. TERRILL, E. M., A. M., Professor of Mining and Ore Dressing.
FREDERICK J. KELLY, Ph. D., Professor of Education.
LEON N. FLINT, A. B., Professor of Journalism.
FREDERICK H. SIBLEY, M. E., Professor of Mechanical Engineering.
MILES W. STERLING, A. M., Associate Professor of Greek.
HANNAH OLIVER, A. M., Associate Professor of Latin.
SELDEN L. WHITCOMB, A. M., Associate Professor of English Literature.
MARTIN E. RICE, M. S., Associate Professor of Physics.
CLARENCE A. DYKSTRA, A. B., Associate Professor of History.
ALBERTA L. CORBIN,³ Ph. D., Associate Professor of German.
GEORGE J. HOOD, B. S., Associate Professor of Mechanical Drawing.
WILLIAM J. BAUMGARTNER, A. M., Associate Professor of Zoölogy.
HENRY O. KRUSE, A. M., Associate Professor of German.
CLARENCE C. CRAWFORD, Ph. D., Associate Professor of European History.
VICTOR E. HELLEBERG, LL. B., Associate Professor of Sociology.
CHARLES A. HASKINS,¹ B. S., Associate Professor of Sanitary Engineering.
MARGARET LYNN, A. M., Associate Professor of English Literature.
ELISE NEUEN SCHWANDER, Ph. D., Associate Professor of Romance Languages.
HENRY C. ALLEN, A. M., Associate Professor of Chemistry.
WILLIAM W. DAVIS, Ph. D., Associate Professor of American History and Political Science.
WILLIAM C. MCNOWN, B. S., Associate Professor of Civil Engineering.
ALFRED H. SLUSS, B. S., Associate Professor of Mechanical Engineering.
HUBERT W. NUTT, Ph. B., Associate Professor of Education.
BURTON L. WOLFE, B. S., Associate Professor of Mining.
FLORENCE B. SHERBON, A. M., Associate Professor of Physical Education.
CHARLES M. STERLING, A. B., Assistant Professor of Pharmacognosy.
EDWIN F. STIMPSON, B. S., Assistant Professor of Physics.
CHARLES COCHRAN,³ Assistant Professor of Mechanical Drawing.
CLIFFORD C. YOUNG, A. B., Assistant Professor of Chemistry, and Director of State Water Survey.
FREDERICK A. G. COWPER,³ A. M., Assistant Professor of Romance Languages.

1. On leave for military service.

3. On leave.

THE UNIVERSITY EXTENSION DIVISION.

The University Extension Division consists of four departments: Correspondence-Study, General Information, Municipal Reference, Child Welfare.

NOTE.—Bulletins giving detailed information in regard to each of these departments will be sent on request.

THE DEPARTMENT OF CORRESPONDENCE-STUDY.

PURPOSE.

The purpose of the Department of Correspondence-Study is to assist those who have not been able to secure a higher education through the regular channels, either to inform themselves on some particular subject or to prepare for College work in residence.

HISTORY.

In 1891 University Extension had its beginning at the University of Kansas in courses of lectures, both informational and cultural, given at various points in the state by University professors. The idea of extending the University's usefulness was further developed in 1903 by the opening of a Summer Session. The establishment, in 1909, of the Correspondence-Study Department of the University Extension Division was the final step in the effort to make the University serve in every way possible the educational needs of the state.

GRADES OF WORK OFFERED.

Most of the work offered is of university grade, but certain high-school courses are provided, and the number of vocational courses is being increased.

THE SYSTEM.

PROCEDURE. The student who wishes to undertake correspondence study should first select such course or courses as he may desire to take, and should fill out the blank with all the information called for, returning it with the required fee to the office of the Extension Division.

THE LESSON SHEETS. If the instructor approves the application, the first lesson will be sent, with instructions for study and methods of preparation, and directions for returning lesson sheets and reports. Each lesson will be returned to the student with such corrections, explanations, and suggestions as may be needed. Lists of books, assignments for reading, and all necessary assistance will be furnished throughout the course, so that no student will be left without adequate aid and guidance. Questions on the subject in hand are at all times encouraged.

Each assignment contains questions to test the student's methods of work as well as his understanding of the ground covered. After preparing for recitation the student writes his answers to the questions and returns them, together with a statement of any difficulties which may have arisen during his study.

BY WHOM PREPARED. These courses are prepared by the members of the University Faculty, and each represents a definite amount of work, corresponding to an equivalence of work done in residence at the University or in the standardized schools of our educational system.

THE UNIT COURSE. The unit course is divided, where practicable, into forty assignments, representing a five hour course in residence. Such a course represents at least an amount of work equal to that done in residence at the University in a study of five full recitation-hours per week for one semester or half year. It is assumed that this work may be done by the average student in forty weeks with a minimum leisure for study of one hour per day, six days in the week. It is, however, the student's privilege to pursue his studies as rapidly as he is able. Shorter courses are ordinarily divided into fifths of the unit course of forty assignments, corresponding to three-hour, two-hour, or one-hour courses in resident work at the University. A three-hour course in residence, then, would be covered by correspondence teaching in twenty-four assignments, and shorter courses in proportion. Two assignments in correspondence approximately cover the ground of a week's work in residence.

EXAMINATIONS. Examinations are optional with the student, but are required where credits are sought. These examinations must be taken at the University, or under conditions approved by the University. In the later case, arrangements may often be made with the local superintendent of schools to conduct the examination.

Regulations.

1. Students may begin correspondence courses at any time during the year, but the Department cannot guarantee that all the courses will be given during the summer months.
2. For admission to the Correspondence-Study Department no preliminary examination is required. The student is required to fill out an application blank giving such information as may be helpful in adapting the instruction to the personal needs of each student.
3. Students who undertake correspondence-study work for University credit must state this fact in advance and comply with all the requirements of the University.
4. Persons who seek a University degree must conform to all the requirements exacted by the college or school in which such degree is sought. A maximum of one-half the required credits for the A. B. degree may be accumulated through correspondence. The work of the earlier part of the course is more likely to be available for correspondence study. The last thirty hours must be taken in residence.
5. Combinations of correspondence study and the residence work of the Summer Session are possible and recommended.
6. For the benefit of the Department it is desired that the applicant state fully the purpose he has in view in taking the work, and also in detail such educational advantages, training, or experience as he may have had. The Department endeavors to meet the needs of the individual student by advice and suggestions, as well as by formal instruction, but whenever it finds that the course elected is not for the best interests of the student it reserves the right to reject the application, or to advise change or discontinuance.
7. Correspondence students will be expected to complete a unit course within twelve months from the time of enrollment.
8. During an instructor's vacation a substitute will be provided to carry on such course or courses, if possible, or the time for completing the courses will be extended.
9. No fee is refunded because of a student's inability to enter upon or pursue a course for which he has once registered. If an application for instruction is rejected the fee is returned.

10. Each correspondence course is equivalent to the corresponding residence course, and commands credit unless definite statement is made to the contrary.

11. Not more than two courses may be carried through correspondence study at one time. Each subject listed under the various departments is a course; for example: first-year English is one course, German I is one course.

12. Students enrolling for credit must meet the prerequisite conditions for each course. This regulation may be waived by the instructor for a student enrolling not for credit.

Special Engineering Regulations.

1. Not more than one-fourth of the number of unit hours of credit required for graduation in any engineering department may be obtained through correspondence study.

2. Not more than seven hours of credit in sequence in courses which are interdependent may be obtained through correspondence.

3. A failure in any branch in residence may not be made up through correspondence.

University Credit.

1. University credit can be granted only to students who have met the entrance requirements of the University. Upon satisfactory completion of a correspondence course designed for credit, the student will be awarded a certificate of credit in the University. Other students' grades will be recorded merely in the files of the department and certificates issued for the same.

2. The maximum credit granted for work done by correspondence study may not exceed one-half the unit hours required for graduation.

3. At the completion of each correspondence-study course for University credit the student shall pass an examination held under the direction of the instructor giving such course, or by some one designated by the University for that purpose.

4. Work taken for credit may not be done by any student while in attendance at any institution of learning.

5. Admission credit is given for courses covering college entrance requirements which are satisfactorily completed and passed by examination.

6. University credit is given for courses of college grade satisfactorily completed and passed by examination.

7. If the student has a record of residence work in the University, credits gained from correspondence courses are immediately transferred to that record; if not, they are held in the Correspondence-Study Department until the student secures such a record covering one year of study in residence.

8. All courses offered by the Correspondence-Study Department, whether taken for University credit or not, are on a uniform basis in reference to the amount of work covered. Courses which are satisfactorily completed have, therefore, a definite value, and all students who successfully complete such courses will be awarded certificates of the grade in which the work is taken.

THE HOUR. The term "hour" means one hour of class work a week for one semester, or half year. The unit course is a five-hour course; that is, one in which the class meets for one hour five days in the week for a half year. One hundred and twenty hours of credit are required to obtain the A. B. degree.

EXPENSES.

FEES. The only fee charged is the incidental fee of \$10 a year for residents of Kansas, or \$15 for nonresidents. This applies to all schools of the University. For this amount the student is entitled to tuition for

a calendar year, and during that period he may carry two courses at a time. The incidental fee must be paid each year that the student re-enrolls for study. If a correspondence student should later come into residence at the University he would then be required to pay the \$5 matriculation fee. The fee for correspondence-classroom study is \$15 per year.

PAYMENTS. The incidental fee may be paid in monthly installments of five dollars when the student finds it necessary. In this plan the general rule of payment in advance applies. No extra charge is exacted for a course where payments are made by installments. *But in every case at least five dollars of the required fees must accompany the application.*

HOW TO REMIT. Money should be sent in the form of postal or express money order, or Kansas City or Chicago draft, made payable to the University of Kansas. Mail to the University Extension Division, Lawrence, Kansas.

BOOKS AND OUTFIT. All necessary textbooks, drawing outfits, apparatus, dissecting material, chemicals, etc., are extra, and must be procured by the student. The student also pays postage on lessons one way.

TRAVELING LIBRARIES. An arrangement has been made with the State Traveling Libraries Commission at Topeka to furnish reference books in loan libraries of five to twelve volumes, a separate library for each of such courses. A library covering the work of a certain course may thus be obtained and used by the student under the following terms:

First. A fee of one dollar is charged and express both ways.

Second. The books may be kept six months.

Third. The student wishing to retain books over six months may do so by paying an extension fee of twenty-five cents.

The courses which need traveling libraries may be learned on application.

CORRESPONDENCE-CLASSROOM STUDY.

If a group of fifteen or more students registers to pursue the same course of study, arrangements will be made, when possible, for regular weekly visits of instructors who will conduct classes and hold personal conferences with students.

The tuition for each student enrolling for any one class is \$5 per term of fifteen weeks.

For a fee of \$15 per year the student may enroll for as many classes as may be available, no more than two classes, however, to be pursued at the same time.

The Extension Division cannot guarantee to supply all demands of this nature, but will do so as far as the time of the instructors and the facilities permit.

COURSES OF INSTRUCTION.

ASTRONOMY.

1.—DESCRIPTIVE ASTRONOMY. Twenty-four assignments, three hours College credit.

BOTANY.

1.—ELEMENTARY BOTANY. Forty assignments, five hours College credit.

2.—GENERAL MORPHOLOGY OF PLANTS. Forty assignments, five hours College credit.

3.—PLANT HISTOLOGY. Forty assignments, five hours College credit.

CHEMISTRY.

1.—ELEMENTARY CHEMISTRY. Forty assignments, five hours College credit.

2.—SANITARY AND APPLIED CHEMISTRY. Forty assignments, five hours College or Engineering credit.

3.—QUANTITATIVE ANALYSIS. Forty assignments, five hours College or Engineering credit.

4.—A SPECIAL COURSE IN CHEMICAL WATER ANALYSIS. Part I, forty assignments, five hours College credit. Part II, twenty assignments, two and one-half hours College credit.

5.—QUALITATIVE ANALYSIS. Forty assignments, five hours College or Engineering credit.

6.—CHEMISTRY OF FOOD PRODUCTS. Forty assignments, five hours College credit.

ECONOMICS AND COMMERCE.

1.—ELEMENTS OF ECONOMICS. Forty assignments, five hours College credit.

2.—BANKING. Twenty-four assignments, three hours College credit.

3.—LABOR PROBLEMS. Twenty-four assignments, three hours College credit.

4.—LIFE INSURANCE. Sixteen assignments, two hours College credit.

5.—COMMERCIAL GEOGRAPHY. Twenty-four assignments, three hours College credit.

EDUCATION.

1.—HISTORY OF ANCIENT AND MEDIEVAL EDUCATION. Twenty-four assignments, three hours College or Education credit.

2.—HISTORY OF MODERN EDUCATION. Twenty-four assignments, three hours College or Education credit.

3.—PRINCIPLES OF EDUCATION. Twenty-four assignments, three hours College or Education credit.

4.—EDUCATIONAL ORGANIZATION AND ADMINISTRATION. Twenty-four assignments, three hours College of Education credit.

5.—SCHOOL HYGIENE. Twenty-four assignments, three hours College or Education credit.

6.—EDUCATIONAL PSYCHOLOGY. Twenty-four assignments, three hours College or Education credit.

7.—SCHOOL MANAGEMENT. Twenty-four assignments, no credit.

8.—METHODS OF TEACHING. Twenty-four assignments, three hours College or Education credit.

ENGINEERING.

1.—FREE-HAND AND MECHANICAL DRAWING. Twenty-four assignments, three hours Engineering credit.

2.—MACHINE DRAWING. Twenty-four assignments, three hours Engineering credit.

3.—ELEMENTARY MECHANICS. Not for credit. Sixteen assignments.

4.—MECHANISM AND MACHINE DESIGN. Not for University credit. Thirty-two assignments.

5.—HIGHWAY ENGINEERING. Sixteen assignments, two hours Engineering credit.

6.—ENGINES AND BOILERS. Twenty-four assignments, three hours Engineering credit.

12.—COAL MINING. Credit may be given to students having sufficient preparation. Forty assignments, five hours Engineering credit.

For additional mining courses, see announcement of courses 50 to 50.

*14.—ELEMENTARY MINERALOGY. Forty assignments, five hours College or Engineering credit.

*15.—GENERAL GEOLOGY. Forty assignments, five hours College or Engineering credit.

19.—REINFORCED CONCRETE. May be taken only by students of advanced standing and graduate engineers. Twenty-four assignments, three hours Engineering credit.

20.—ARCHITECTURAL DRAWING. Three hours Engineering credit will be given, provided the work of five assignments is done at the University under personal instruction. Part I, twenty assignments; part II, twenty assignments.

23.—WORKS MANAGEMENT. May be taken for engineering credit by students who have done a sufficient amount of work to give them standing with the Junior class. Sixteen assignments, two hours Engineering credit.

24.—PLANE SURVEYING. When accompanied by field work of a satisfactory nature Engineering credit will be given. Forty assignments, five hours Engineering credit.

25.—RAILWAY SURVEYING. Forty assignments, five hours Engineering credit.

25a.—RAILWAY DRAWING. Twenty-four assignments, one hour Engineering credit.

26.—HYDRAULICS. Twenty-four assignments, three hours Engineering credit.

Vocational Courses.

(University credit is not given.)

1.—SHOP MATHEMATICS. Forty assignments.

2.—DRAWING. Twenty assignments.

3.—MACHINE DRAWING. Ten or twenty assignments.

4.—ARCHITECTURAL DRAWING. Twenty assignments.

10.—ELEMENTS OF CHEMISTRY. Ten assignments.

* See, also, courses 1, 2 and 3 under Mineralogy and Geology.

- 11.—MATERIALS OF MACHINE CONSTRUCTION. Ten assignments.
- 17.—THE ELEMENTS OF TELEPHONY. Twenty-four assignments.
- 20.—STEAM ENGINEERING. Forty assignments.
- 21.—GAS, GASOLINE, AND OIL ENGINES. Ten assignments.
- 29.—DIRECT CURRENT ELECTRICITY. Twenty assignments.
- 30.—ALTERNATING CURRENT ELECTRICITY. Twenty assignments.
- 31.—SWITCHBOARD AND CONTROLLING DEVICES. Ten assignments.
- 32.—ELEMENTS OF ILLUMINATION. Twenty assignments.
- 50.—MINE SURVEYING OR MINE ENGINEERING. Forty assignments.
- 51.—MINE ACCIDENTS: CAUSES AND PREVENTION. Fifteen assignments.
- 52.—GENERAL MINING. Twenty assignments.
- 53.—ORE DRESSINGS: CONCENTRATION OF ORES. Twenty assignments.
- 54.—EXPLOSIVES. Ten assignments.
- 55.—VENTILATION OF MINES. Ten assignments.
- 56.—COAL MINING. Twenty assignments.
- 56X.—COMBINED COURSE FOR INSPECTORS AND MINE FOREMEN. Forty assignments.
- 58.—ORIGIN AND OCCURRENCE OF SALT. Ten assignments.
- *60.—FIRST AID AND RESCUE WORK.

ENGLISH.

- 1.—RHETORIC AND ENGLISH COMPOSITION. Forty assignments, five hours College or Engineering credit.
- 2.—NARRATION AND DESCRIPTION. Forty assignments, five hours College credit.
- 3.—ENGLISH LITERATURE. Forty assignments, five hours College credit.
- 4.—HISTORY OF ENGLISH LITERATURE. Forty assignments, five hours College credit.
- 5.—ENGLISH LITERATURE OF THE EIGHTEENTH CENTURY. Forty assignments, five hours College credit.
- 7.—AMERICAN LITERATURE. Twenty-four assignments, three hours College credit.
- 8.—VICTORIAN LITERATURE. Forty assignments, five hours College credit.
- 9.—HISTORY OF THE ENGLISH DRAMA. Twenty-four assignments, three hours College credit.
- 10.—BROWNING. Twenty-four assignments, three hours College credit.
- 11.—MODERN ENGLISH GRAMMAR. Sixteen assignments, two hours credit.
- 12.—ELIZABETHAN DRAMA (EXCLUSIVE OF SHAKSPERE). Twenty-four assignments, three hours College credit.

ENTOMOLOGY.

- 1.—INTRODUCTORY ENTOMOLOGY. Forty assignments, five hours College credit.
- 2.—SYSTEMATIC ENTOMOLOGY. Sixteen assignments, two hours College credit.

* Since this work will be carried out in coöperation with the federal bureau officials, it will be necessary to conform to the schedules of the car, and the instruction will be given by special arrangement instead of by the regular method of fixed assignments.

3.—APPLIED ENTOMOLOGY. Sixteen assignments, two hours College credit.

4.—THE ROLE OF INSECTS IN THE SPREAD OF DISEASE. Not for University credit. Sixteen assignments.

GERMAN.

1.—GERMAN I. Forty assignments, five hours College or Engineering credit.

2.—GERMAN II. Forty assignments, five hours College credit.

3.—GERMAN III. Forty assignments, five hours College credit.

4.—GERMAN IV. Forty assignments, five hours College credit.

5.—WALLENSTEIN. Twenty-four assignments, three hours College credit.

6.—GERMAN COMPOSITION. Twenty-four assignments, three hours College credit.

7.—GOETHE'S FAUST (Parts I and II). Twenty-four assignments, three hours College credit.

8.—THE CLASSIC DRAMA. Forty assignments, five hours College credit.

9.—(GERMAN 8 AND 9.) SCHILLER'S BRANT VON MESSINA. Sixteen assignments, two hours College credit.

10.—IPHIGENIE AND NATHAN DER WEISE. Twenty-four assignments, three hours College credit.

GREEK.

1.—ELEMENTARY GREEK. Forty assignments, five hours College credit.

2.—XENOPHON'S ANABASIS. Forty assignments, five hours College credit.

3.—HOMER'S ILIAD. Twenty-four assignments, three hours College credit.

HIGH-SCHOOL BRANCHES.

The high-school work now offered is as follows:

ENGLISH:

First year	(40 assignments) one unit.
Second year	(40 assignments) one unit.
Third year	(40 assignments) one unit.
Fourth year	(40 assignments) one unit.
American Literature	(20 assignments) one-half unit.
English Grammar	(20 assignments) no credit.

LATIN:

Beginning	(40 assignments) one unit.
Cæsar	(40 assignments) one unit.
Cicero's Orations	(40 assignments) one unit.
Vergil	(40 assignments) one unit.

MATHEMATICS:

Elementary Algebra, Part A.....	(40 assignments) one unit.
Elementary Algebra, Part B.....	(20 assignments) one-half unit.
Plane Geometry	(40 assignments) one unit.
Solid Geometry	(20 assignments) one-half unit.
Plane Trigonometry	(20 assignments) one-half unit.

GERMAN:

First year	(40 assignments) one unit.
Second year	(40 assignments) one unit.
Third year	(40 assignments) one unit.

HISTORY:

Ancient	(40 assignments) one unit.
Medieval and Modern.....	(40 assignments) one unit.
English	(40 assignments) one unit.
American	(40 assignments) one unit.

FRENCH:

First year	(40 assignments) one unit.
Second year	(40 assignments) one unit.

SPANISH:

First year	(40 assignments) one unit.
Second year	(40 assignments) one unit.

PSYCHOLOGY	(20 assignments) one-half unit.
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HISTORY.

- 1.—AMERICAN HISTORY. Forty assignments, five hours College credit.
- 2.—ENGLISH HISTORY. Forty assignments, five hours College credit.
- 6.—MODERN EUROPEAN HISTORY. Twenty-four assignments, three hours College credit.

HOME ECONOMICS.

- 1.—HOME DECORATION. Sixteen assignments, two hours College credit.
- 2.—FOOD AND NUTRITION. Twenty-four assignments, three hours College credit.
- 3.—PUBLIC ASPECTS OF THE HOUSEHOLD. Twenty-four assignments, three hours College credit.

JOURNALISM.

- 1.—THE THEORY AND PRACTICE OF ADVERTISING. Twenty-four assignments, three hours College credit.
- 2.—THE NEWSPAPER. Twenty-four assignments, three hours College credit.
- 3.—THE SHORT STORY. Twenty-four assignments, three hours College credit.
- 4.—NEWSPAPER II—ADVANCED COURSE. Twenty-four assignments, three hours College credit.
- 5.—PRINTING AND NEWSPAPER COST. Eight assignments, not for credit.
- 6.—RETAIL ADVERTISING. See courses for retail merchant, page twenty-one.

LATIN.

- 1.—ELEMENTARY LATIN. Forty assignments, one unit of entrance credit, or five hours College credit.
- 2.—CÆSAR. Forty assignments, one unit of entrance credit, or five hours College credit.
- 3.—CICERO'S ORATIONS. Forty assignments, one unit of entrance credit, or five hours College credit.
- 4.—VERGIL'S ÆNEID. Forty assignments, one unit of entrance credit, or five hours College credit.
- 5.—PREPARATORY PROSE COMPOSITION. Twenty-four assignments, no credit.
- 6.—CICERO'S DE SENECTUTE, AND PROSE COMPOSITION. Twenty-four assignments, three hours College credit.
- 7.—HORACE'S ODES. Twenty-four assignments, three hours College credit.
- 8.—PROSE COMPOSITION. Sixteen assignments, two hours College credit.

MATHEMATICS.

I.—College and University Grade.

5.—PLANE TRIGONOMETRY. Sixteen assignments, two hours College or Engineering credit.

6.—UNIVERSITY ALGEBRA. Twenty-four assignments, three hours College or Engineering credit.

6a.—UNIVERSITY ALGEBRA. Forty assignments, five hours College or Engineering credit.

7.—ANALYTIC GEOMETRY. Thirty-two assignments, four hours College or Engineering credit.

8.—DIFFERENTIAL CALCULUS. Twenty-four assignments, three hours College credit.

8E.—DIFFERENTIAL CALCULUS. Forty assignments, five hours Engineering credit.

9.—INTEGRAL CALCULUS. Twenty-four assignments, three hours College or Engineering credit.

II.—Special Course in Mathematics.

1. (VOCATIONAL) SHOP MATHEMATICS. No University credit. Forty assignments.

MINERALOGY AND GEOLOGY.

1.—ELEMENTARY MINERALOGY. Forty assignments, five hours College or Engineering credit.

2.—GENERAL GEOLOGY. Forty assignments, five hours College or Engineering credit.

PHARMACY.

Pharmaceutical Chemistry.

A I.—Elementary Pharmacy Physics and Pharmacy Inorganic Chemistry. Twenty assignments.

A II.—Organic Pharmacy Chemistry, including a discussion of the organic chemicals of pharmacal interest. Should follow course A I. Twenty assignments.

Materia Medica.

B I.—Pharmacognosy with Botanical Introduction. Ten assignments.

B II.—A brief outline of Physiology and introduction to the subject of Materia Medica. Ten assignments.

B III.—Pharmacological and Therapy Dynamics. Fifteen assignments.

B IV.—Toxicology and Posology. Five assignments.

Pharmacy.

C I.—Descriptive Pharmacy. Terms, processes, and apparatus used in pharmacal operations. Seven assignments.

C II.—Metrology, Specific Gravity, and Pharmaceutical Arithmetic. Eight assignments.

C III.—Official Pharmacy. The pharmaceutical classification of medicines. Five assignments.

C IV.—Official Pharmacy. A critical discussion of the pharmaceutical preparations. Fifteen assignments.

C V.—Pharmacy Latin and Principles of Prescription Writing. Three assignments.

C VI.—Pharmaceutical Jurisprudence. Two assignments.

Independent Pharmacy Courses.

- 1.—INTRODUCTORY PHARMACY. Twenty assignments.
- 2.—ORGANIC MATERIA MEDICA. Twenty assignments.

PHILOSOPHY.

- 1.—GENERAL PSYCHOLOGY. Twenty-four assignments, three hours College credit.
- 2.—LABORATORY PSYCHOLOGY. Sixteen assignments, two hours College credit.
- 3.—INTRODUCTION TO PHILOSOPHY. Sixteen assignments, two hours College credit.
- 4.—HISTORY OF ANCIENT PHILOSOPHY. Twenty-four assignments, three hours College credit.
- 5.—HISTORY OF MEDIEVAL AND MODERN PHILOSOPHY. Twenty-four assignments, three hours College credit.
- 6.—ETHICS. Forty assignments, five hours College credit.
- 7.—ELEMENTARY LOGIC. Twenty-four assignments, three hours College credit.

PHYSICAL EDUCATION.

- 1.—SPORT AND GAMES. Sixteen assignments, two hours credit, School of Education.
- 2.—THEORY OF PHYSICAL EDUCATION. Sixteen assignments, two hours College credit.
The following courses do not carry University credit:
- 3.—ATHLETICS FOR GIRLS.
- 4.—PRACTICAL GYMNASTICS.
- 5.—FESTIVALS, PLAYS, AND GYMNASTIC EXHIBITIONS.

PHYSICS.

- 1.—ELEMENTARY PHYSICS. Twenty-four assignments, three hours College credit.
- 2.—MECHANICS, HEAT, AND SOUND. Thirty-two assignments, four hours College or Engineering credit.
- 3.—LIGHT, ELECTRICITY, AND MAGNETISM. Thirty-two assignments, four hours College or Engineering credit.
- 4.—MECHANICS, SOUND, AND LIGHT. Twenty-four assignments, three hours College credit.
- 5.—HEAT, ELECTRICITY, AND MAGNETISM. Twenty-four assignments, three hours College credit.
- 6.—THEORY OF ELECTRICITY AND MAGNETISM. Twenty-four assignments, three hours College credit.

PHYSIOLOGY.

- 1.—ELEMENTARY PHYSIOLOGY. Forty assignments, five hours College credit.
- 2.—HYGIENE AND SANITATION. Twenty-four assignments, three hours College credit.

POLITICAL SCIENCE.

- 3.—AMERICAN GOVERNMENT. Forty assignments, five hours College credit.
- 4.—MUNICIPAL GOVERNMENT. Twenty-four assignments, three hours College credit.

5.—MUNICIPAL PROBLEMS. Sixteen assignments, two hours College credit.

PUBLIC SPEAKING.

1.—ORAL INTERPRETATION. Sixteen assignments, two hours College credit.

2.—EXTEMPORE SPEAKING. Sixteen assignments, two hours College credit.

ROMANCE LANGUAGES.

1.—ELEMENTARY FRENCH (Part I). Forty assignments, five hours College or Engineering credit.

2.—ELEMENTARY FRENCH (Part II). Forty assignments, five hours College or Engineering credit.

3.—MODERN FRENCH PROSE. Twenty-four assignments, three hours College credit.

4.—FRENCH COMPOSITION. Sixteen assignments, two hours College credit.

5.—SCIENTIFIC FRENCH. Twenty-four assignments, three hours College credit.

6.—FRENCH PROSE AND POETRY. Twenty-four assignments, three hours College credit.

1.—ELEMENTARY SPANISH (Part I). Forty assignments, five hours College or Engineering credit.

2.—ELEMENTARY SPANISH (Part II). Forty assignments, five hours College or Engineering credit.

3.—MODERN SPANISH WRITERS. Twenty-four assignments, three hours College credit.

4.—SPANISH COMPOSITION. Sixteen assignments, two hours College credit.

1.—ELEMENTARY ITALIAN. Forty assignments, five hours College or Fine Arts credit.

SOCIOLOGY.

1.—ELEMENTS OF SOCIOLOGY. Twenty-four assignments, three hours College credit.

2.—SOCIAL PATHOLOGY. Sixteen assignments, two hours College credit.

3.—SOCIAL SURVEYS. Sixteen assignments, two hours College credit.

ZOOLOGY.

1.—INTRODUCTORY ZOÖLOGY. Forty assignments, five hours College credit.

2.—HISTOLOGY. Forty assignments, five hours College credit.

3.—HEREDITY SURVEYS (ZOÖLOGICAL PROBLEMS). Twenty-four to forty-eight assignments, three to six hours College credit.

SPECIAL COURSES.

The following courses, for merchants and others, do not carry University credit.

Courses in Child Hygiene.

1a.—PRENATAL HYGIENE. Five assignments.

1b.—INFANT HYGIENE. Ten assignments.

2.—HOME NURSING FOR CHILDREN. Eight assignments.

Courses for the Retail Merchant.

- 1.—RETAIL ADVERTISING. Ten assignments.
- 2.—SALESMANSHIP. Ten assignments.
- 3.—BOOKKEEPING. Twelve assignments.
- 4.—ACCOUNTING PRINCIPLES. Sixteen assignments.

Courses in Law.

- 1.—ELEMENTARY LAW.
- 2.—CONTRACT.
- 3.—AGENCY.

Other Special Courses.

- 1.—WATER PURIFICATION. Ten assignments.
- 2.—FIRE PROTECTION. Twelve assignments.
- 3.—VITAL STATISTICS AND DEMOGRAPHY. Eight assignments.
- 4.—GOVERNMENT AND CITIZENSHIP. Twenty-four assignments.

THE DEPARTMENT OF GENERAL INFORMATION.

The Department of General Information of the University Extension Division of the University of Kansas has been organized with the view of making knowledge more generally available to the people of Kansas. It coöperates with the schools and women's clubs, civic clubs, debating societies, and other similar organizations, and furnishes any available information to citizens of Kansas upon subjects of general interest. The department also issues bulletins on public questions.

LECTURES.

For several years the University of Kansas, through its Extension Division, has arranged for lectures by members of the University Faculty in the different towns in the state.

Single lectures are offered for entertainment, information, and culture; but the department wishes to emphasize the courses or series of lectures which may be offered to serious-minded students, as affording, at least approximately, the intellectual discipline and information and cultural value of regular University work in residence.

The minimum length of a regular University Extension course is six lectures. Members of University Extension classes who are candidates for credit will be required, besides attendance at lectures, to do additional work prescribed by the lecturer, to include reference and other reading, conferences, and examinations. The maximum credit granted upon the satisfactory completion of such a course will be one semester hour. With the consent of the department concerned, students who are candidates for the master's degree may count *in absentia* work done in Extension lecture courses given by members of the University Faculty to the extent of twelve hours, allowing two hours for each course of twelve lectures.

Musicals by members of the Fine Arts Faculty are also offered.

A bulletin descriptive of the single lectures, courses of lectures, commencement addresses, and musicals offered to Kansas communities will be sent to any address on request.

WOMEN'S CLUBS.

This department offers assistance to any club as an organization or to the individual members. Outlines have been made that will enable clubs to make a comprehensive study of the subjects treated. These outlines are sent out as a loan for two weeks.

Wherever information upon a given topic is available it will be sent on request to individual club members.

PACKAGE LIBRARIES.

Package libraries giving information on subjects of current popular interest are sent out on request and may be retained for a period of two weeks.

LANTERN SLIDES.

Lantern slides designed to supplement instruction in schools, aid libraries and clubs in their educational work, and provide material for lectures and entertainment for various groups of people in the state, can be secured through the Extension Division of the University of Kansas.

Each set of slides is accompanied by a typewritten or printed lecture. These lectures can be supplied in duplicate and furnished in advance of the time for using the slides in order that the person who is to present the lecture may be entirely familiar with the slides and their description.

EDUCATIONAL MOTION-PICTURE FILMS.

About seventy-five educational motion-picture films are now available for the schools and community organizations in Kansas.

DEBATING AND PUBLIC DISCUSSION.

The department has issued a bulletin on debating, and each year issues a bulletin containing references on the question to be argued by the Kansas High School Debating League. It stands ready to assist with references or collected material any other organization interested in debate.

PLAY SERVICE.

In order to assist high-school teachers and amateur dramatic clubs in securing good plays quickly, and without too great an expense, the Extension Division has inaugurated a Play Service Bureau. Upon request this Bureau will recommend and send three or four plays as a three days' loan. Recitations suitable for county contests are sent as a one-week loan.

THE DEPARTMENT OF MUNICIPAL REFERENCE.

The Municipal Reference Department, established in 1910, endeavors to do for city officials and citizens what a legislative reference library does for legislators. This department acts as a clearing-house for information and ideas concerning municipal problems, such, for example, as those connected with public utilities, franchises, municipal legislation and ordinances, sanitation, city planning, public improvements, uniform accounting, etc.

The experience of cities of Kansas and other states is brought together and analyzed, and the results placed at the service of the municipalities of this state. Copies of model city ordinances and regulations on many municipal subjects are kept on file and furnished on request of city officers and citizens.

The coöperation of the faculties of the College, the School of Engineering, and the School of Law enables the department to serve as an information bureau of wide scope and effectiveness for the benefit of the officials and people of the municipalities of the state.

The League of Kansas Municipalities, organized in connection with the Municipal Reference Department, is made up of Kansas cities, the officials of which meet each year in three days' convention for the discussion of municipal problems and the interchange of ideas on city administration and legislation. The proceedings of the convention are printed in *Kansas Municipalities*, the monthly publication of the League, established December, 1914. One hundred and forty-two Kansas cities and towns were members of the League in the year 1917-1918.

THE DEPARTMENT OF CHILD WELFARE.

The Department of Child Welfare undertakes to render service to the state in relation to certain definite matters as listed below.

1.—CHILD WELFARE CLUBS. The Department will coöperate with local communities in the formation of parent-teacher associations, mothers' clubs, and other such child-fostering organizations.

2.—PLAY ACTIVITIES. The department is interested in the organization and promotion of municipal playgrounds, the establishment of neighborhood centers, and the equipment of the home with suitable play apparatus. Plans for the foregoing will be offered by correspondence.

3.—VACATION INDUSTRY. The department will offer a definite plan to provide wholesome, cultural vacation industry for the children—home and school gardening, and the like—and to make this effort a part of a larger program, including directed play and sociability.

4.—CIVIC AND SOCIAL CENTERS. The department will assist in the organization of civic and social centers. It will draw up plans for the establishment of community halls, social-center buildings, or other places wherein the children and young people may enjoy the advantages of wholesome entertainment for their leisure and recreational hours.

5.—PATRIOTIC SERVICE FOR THE YOUNG. The department will coöperate with all those interested in the patriotic service of the young—the Junior Red Cross, juvenile thrift, food conservation, the patriotic activities of the Boy Scouts, and the like.

6.—INDIVIDUAL ADVICE. The department offers individual advice to parents, and to those who wish to make preparation for child-welfare work.

SECTION XII.

**The Divisions of Athletics, Libraries, Museums,
Publications, State Service Work,
University Surveys.**

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The Divisions of Athletics, Libraries, Museums, Publications, State Service Work, University Surveys.

ATHLETICS.†

Director: WILLIAM O. HAMILTON.

Athletic Board: *Ex officio* members: Chancellor STRONG, JOHN SUNDWALL; Senate representatives: E. W. MURRAY, H. A. RICE, J. W. VAN DER VRIES,* E. M. BRIGGS; student representatives: PAUL MURPHY, JOSEPH CASEY, BERNARD JENSEN, JOHN D. SHREVE, ENOS HOOK.

Professor OLCOTT.*

Mr. McCARTY.*

Mr. CLARK.*

Mr. BOND.

The Division of Athletics, including intercollegiate and intramural sports, has its headquarters on the upper floor of Robinson Gymnasium, at the west end of the building. Here are located the offices of Prof. W. O. Hamilton, his coaches, and assistants. This division affords all men students the opportunity to take part in sports and athletics. The large well-lighted games room, 70 by 127 feet, is used for intercollegiate and intramural games. It is equipped with a regulation basket-ball court, 90 by 50 feet, with glass basket stops and two practice basket-ball courts, 60 by 45 feet; it has also a regulation tennis court. On the balcony is located the eighteen-lap running track, banked and cork covered. Special flooring is provided for use of indoor spikes for sprinting, jumping, hurdling, and pole vaulting. A hand-ball and boxing room on the east, and a padded wrestling room on the west adjoin the games room.

Outdoor facilities for carrying on the athletic work are provided at McCook Field. This field is well located with respect to both the University and the town of Lawrence, at the north edge of the campus. It provides three excellent turf-covered football fields, three baseball fields, nine tennis courts, and a one-fifth-mile cinder track. The stands will seat 15,000 and are filled to capacity at the great Kansas-Missouri and Kansas-Nebraska football games. Training quarters with lockers, hot and cold showers, massage room, etc., are maintained. No fees are charged for use of these facilities.

SENATE REGULATION. The University Senate has adopted rules governing the standing of all those who represent the University in athletic contests. Good scholarship and gentlemanly conduct are required of all such contestants.

THE ATHLETIC BOARD. All intercollegiate athletic contests are under the control of the University Athletic Board, composed of five students elected by the Athletic Association, four Faculty members appointed by the University Senate, the Chancellor of the University, and the professor of physical education. The last two are *ex officio* members.

RULES. The athletics of the University are required to conform to a certain standard of scholarship set by the University Senate, and also the rules of eligibility of the Missouri Valley Conference.

CONTROL. All forms of athletics are under the immediate control of the director of athletics and his assistants.

* Absent on military service.

† This division is in process of reorganization.

COACHES. All branches of athletics are under the direction of coaches who are also members of the Faculty.

THE ATHLETIC ASSOCIATION is organized to promote the athletics of the University of Kansas. Membership in the association is open to all students. The Chancellor is *ex officio* president of the association.

INTRAMURAL ATHLETICS. The general athletics of the University include football, baseball, basket ball, track, tennis, and soccer. Intramural contests are held in all branches.

INTERCOLLEGIATE GAMES. The University of Kansas is a member of the Missouri Valley Intercollegiate Athletic Association, and a full schedule of games in football, baseball, track, basket ball, and tennis is arranged with members of that association and other educational institutions.

MISSOURI VALLEY CONFERENCES. The University is a member of the Missouri Valley Conferences as follows:

1. The Missouri Valley Conference of Presidents and Governing Board of Institutions, which has general control of athletics as affecting institutions in the conference.

2. The Missouri Valley Conference of Faculty Representatives, having control under the first conference of the details of athletics as affecting the institutions in the conferences, such as eligibility of participants, and so forth.

GENERAL PROVISIONS FOR RECREATION.

Every student is required to engage in such physical exercise as may be designated by the proper medical authority of the University as suitable to his personal needs as shown by a physical examination. Work is arranged on the basis of five hours per week for men and four hours per week for women. All claims for exemption from the above rule must be made on regular blanks furnished by the Physical Education Department to the Exemption Board at the beginning of each semester.

The hand-ball, wrestling, and boxing rooms are available at all times. Basket-ball teams are formed each year.

The swimming pool is always open. It is reserved for the use of women students Mondays and Tuesdays throughout the year, and all are expected to learn to swim. The women's dressing rooms in the gymnasium are supplied with hair dryer, towels, and a woman attendant. In warm weather Potter lake may be used—an artificial lake about an eighth of a mile in circumference, located down the hill north of the gymnasium, within about three minutes walk from the building, and equipped with diving stand, springboard, float, a sanded wading-place, row boat, and dressing tents. Instructors for both men and women are provided.

The tennis courts on McCook Field are open to both men and women.

The girls' athletic field, south of the gymnasium, is equipped with five tennis courts, a hockey field with concrete boundary, an archery field, and space for other games.

THE LIBRARIES.

Director: _____

Division Committee: Chancellor STRONG, E. GALLOO, F. H. HODDER, W. L. BURDICK, A. S. OLIN, G. C. SHAAD, B. F. DAINS, C. G. DUNLAP, and C. M. WATSON.

Librarian and Assistants.

CARRIE M. WATSON, A. B., Librarian.
 CLARA SCIOTO GILLHAM, A. B., Loan Desk Librarian.
 ELIZABETH O. WOODRUFF, A. B., Cataloguer.
 DORA RENN BRYANT, Reference Librarian.
 MARY MAUD SMELSER, Accession Librarian.
 MARY AGNES COLLINS, A. B., Reference Librarian.
 FAY CECILIA MOYS, A. B., Reference Librarian.
 ETTA A. SMITH, Reference Librarian.
 SARAH EVELYN STANTON, A. B., School of Medicine Librarian.
 NELL KENT HUDSON, A. B., School of Law Librarian.
 ANNA DYKE LEARNARD, Ph. B., School of Engineering Librarian.
 GENEVIEVE DAHLENE, A. B., Biology Librarian.
 LILLIAN JANE CONSTANT, A. B., Philosophy and Mathematics Librarian.
 MAUDE ISABEL SPENCER, Geology Librarian.
 AMY SOPHRONIA WOODBURY, A. B., Librarian's Clerk.
 OLIVE IRENE BROWN, A. B., Classifier.
 GENEVA S. OGDEN, A. B., Accession Assistant.

The libraries of the University contain 110,341 bound volumes and some 44,000 pamphlets, in addition to a considerable number of unbound serials and unclassified pamphlets. An annual appropriation of \$17,000 is devoted to the purchase of books. When opportunity permits, rare and unusual books are secured, but thus far the purchase has been regularly dictated by the needs of the various departments and schools of the University. As a result the library is primarily a working library for undergraduates. However, source material in the various departments of knowledge is constantly being added, so that the investigator may have ample facilities for carrying on original work.

The main collection is shelved in the stacks of Spooner Library, but to facilitate use by departments and schools, working collections have been placed in departmental reading rooms, of which seven are in the main library and nine are attached to their respective departments or schools.

A rough estimate of the number of special volumes at the command of these departments and schools follows:

Education (Spooner Library).....	3,214
English (Spooner Library).....	13,224
German (Spooner Library).....	5,000
Latin (Spooner Library).....	2,115
Greek (Spooner Library).....	2,751
Romance Languages (Spooner Library).....	5,304
History (Spooner Library, second floor).....	7,840
Economics (Spooner Library, second floor).....	3,858
Sociology (Spooner Library, second floor).....	2,800
Biology (Snow Hall).....	4,332
Chemistry (Chemistry Building).....	3,044
Engineering (Marvin Hall).....	5,920
Geology (Haworth Hall).....	2,672
Law (Green Hall).....	9,290
Mathematics (Administration Building).....	2,000
Philosophy (Administration Building).....	2,700
Physics (Blake Hall).....	1,360
Medicine (Bell Memorial Hospital, Rosedale).....	5,406

Information in regard to the character of these collections will be found in the statements of their respective departments or schools. Each is in charge of an assistant librarian. The special periodicals pertaining to each are distributed among these libraries.

BOOKSTACKS. There are five stories in the stack room of the library, each eight feet high, so that all the books are within easy reach. The stacks and the flooring of these rooms are of steel. Books are classified and arranged on the shelves by the Dewey system.

CATALOG. The catalog of the library contains about 200,000 cards. The author and subject cards are arranged in one alphabet. The cards are arranged in cases in the general reading room.

THE GENERAL READING ROOM. The general reading room is a large, comfortable and well-equipped room, on the main floor of the library. In this room are about 1,000 volumes of general reference books, cyclopedias, dictionaries, Poole's Index to Periodical Literature, and other books which are of special value for reference purposes.

PERIODICAL ROOM. The University provides in this room 1,185 periodicals and publications of learned societies. The list is made as representative as possible of the important publications of America and Europe. The back numbers are kept on file for reference, and bound as rapidly as funds permit. The completion of the sets is now under way.

Through the courtesy of their editors, 318 Kansas newspapers are contributed to the periodical room.

LIBRARY REGULATIONS.

Spooner Library Building is open every day in the year, Sundays and holidays excepted. The general reading room is open from eight a. m. to ten p. m., when the University is in session, and during vacation from eight a. m. to six p. m. Hours for the departmental reading rooms vary with the departments, but all are open from eight a. m. to five p. m.

Liberal facilities for using the library are offered to all members of the University. All books, except reference books and books too rare to be easily replaced, may be taken from the library by the students for three weeks. However, if a book is needed for a special purpose or a class reservation, it may be recalled by the librarian, and must be returned as soon as notice is received.

The privileges of the general reading room are open to citizens of Lawrence, and, in fact, to all Kansans; but books may be taken from the building only by members of the University.

MEMORIAL GIFTS.

Interest on the Kappa Alpha Theta memorial fund, in memory of May Sexton Agnew, is used for the purchase of books in English literature.

Two memorial gifts were received during the year 1914-'15. The professional library of the late Professor Henry C. Hill was given to the Law School by his father, Edward F. Hill, of Cape Elizabeth, Maine. By the wish of the late Dean F. O. Marvin, his professional library was given to the Engineering School. It has been appropriately shelved as a background for the bust of Dean Marvin by those alumni who presented the bust.

THE LAWRENCE PUBLIC LIBRARY.

The public library of Lawrence is open to students. This library contains 14,546 volumes, mainly of general literature and fiction, and 2,250 public documents.

THE LIBRARY OF THE KANSAS ACADEMY OF SCIENCE.

The Library of the Kansas Academy of Science is located in room 501, Fraser Hall. This library contains some 8,000 volumes of scientific books. It is especially rich in the publications of universities, museums and learned societies throughout the world. The library is open for the use of the public.

THE LIBRARIES IN TOPEKA.

The state library and the state historical library, both in Topeka, are easily accessible for the investigator.

THE MUSEUMS.

Director: FRANK STRONG, Ph. D.*Division Committee:* _____*Curators.*

SAMUEL J. HUNTER, A. M., Curator of the Entomological Collections.
 ERASMUS HAWORTH, Ph. D., Curator of the Geological and Mineralogical collections.
 WILLIAM C. STEVENS, M. S., Curator of the Herbarium.
 ALEXANDER M. WILCOX, Ph. D., Curator of the Classical Museum.
 BENNETT M. ALLEN, Ph. D., Curator of the Vertebrate Paleontological Collections.
 HANDEL T. MARTIN, Assistant Curator of the Vertebrate Paleontological Collections.
 CHARLES D. BUNKER, Assistant Curator of Mammals, Birds, and Fishes.
 CHARLES P. ALEXANDER, B. S., Assistant Curator of Entomological Collections.

The scientific collections of the University are extensive and valuable. They were begun in 1872 by the late Dr. Frances H. Snow, and have been obtained chiefly by University exploring parties in western Kansas, Colorado, Wyoming, Arizona, New Mexico, Texas, Oregon, British America, Alaska, Greenland, and South America. These expeditions have been mainly under the direction of the late Dr. Francis H. Snow, Dr. Samuel W. Williston, Dr. C. E. McClung, Prof. Lewis L. Dyche, Prof. M. A. Barber, Prof. S. J. Hunter, and Mr. Frank Agrelius. Twenty-six of these expeditions were conducted by the late Doctor Snow personally. By means of the material thus accumulated, a system of exchanges has been established with leading institutions and naturalists in all parts of the United States, so that the cabinets contain a very satisfactory representation of the fauna and flora, both recent and extinct, not only of the state of Kansas, but also of the whole of North America. The collections are nearly all housed in the Dyche Museum of Natural History.

ENTOMOLOGY.

Professor HUNTER.
 Mr. ALEXANDER.

The foundation of these extensive collections is the Francis Huntington Snow collection, the result of numerous expeditions and frequent exchanges conducted by the late Doctor Snow. In the collections there are in all about 1,000 types determined by leading specialists in the respective groups. The collections now comprise about 27,000 species and 300,000 specimens, representing all the different order of insects.

The orders of Lepidoptera, Coleoptera, Diptera, Orthoptera and Hemiptera are especially well represented. In the Coleoptera there are over 10,000 species; the Melanopli in Orthoptera are fully represented; the collections of Coccidæ in Hemiptera afford an excellent series for study of North American forms. These collections are being augmented annually through the University Biological Survey, which is an intensive and consecutive systematic survey of all forms found within the state, their distribution, and biology. The collection, as a whole, is one of the largest connected with any educational institution in the United States.

The work in connection with the museum now affords opportunity for study throughout the entire year, in the summer months on the survey, and in the winter months on a continuation of the study of the material obtained throughout the summer. A series of monographs on Kansas forms has been prepared and others are in progress. It is expected that these will be brought together in uniform size and binding.

Specialists frequently visit these collections for recourse to the large representation of types, and such visitors are always welcome. In order to insure the preservation of "types" it has been deemed advisable to adopt the policy of retaining all "types" in the museum.

These collections are of further practical value to the people of the state in the determination of the injurious and beneficial insects and answers to numerous inquiries upon this subject.

The collections occupy a part of the second and third floors in the Dyche Museum of Natural History.

CONTENTS OF MUSEUM.

North American Coleoptera	9,500	36,000
North American Lepidoptera	3,756	12,208
North American Diptera	2,300	7,000
North American Hymenoptera	1,304	3,912
North American Hemiptera	1,200	4,000
North American Orthoptera	500	1,900
North American Neuroptera	300	1,100
Exotic Coleoptera	2,600	8,450
Exotic Lepidoptera	990	2,420
Collections for studies in geographic distribution, variations and economic problems		205,000
Grand totals	22,450	281,990

SUMMARY OF TYPES IN SNOW ENTOMOLOGICAL COLLECTIONS.

Neuroptera	2
Orthoptera	16
Hemiptera	46
Coleoptera	12
Diptera	502
Lepidoptera	100
Mymenoptera	258
African Diptera	25
Total	961

THE HERBARIUM.

Assistant Professor CHARLES.

The herbarium includes about 10,000 specimens, identified and labeled, of flowering plants, besides much material partly identified. The flora of Kansas and of the Rocky Mountains is well represented. There is also a considerable amount of cryptogamic material, including sets of economic fungi of North America and of North American lichens. The herbarium is housed in Snow Hall.

THE CLASSICAL MUSEUM.

Professor WILCOX.

The classical museum contains full-sized plaster casts of the Hermes the Satyr of Praxiteles, the Venus of Melos, the Apollo Belvedere, the Diana of Versailles, the so-called Theseus of the Parthenon, three Metopes and twelve slabs of the north frieze and twenty of the east frieze of the Parthenon, the Varvakeion and Lenormant statuettes and the Strangford shield of the Athena Parthenos of Phidias, the Hégeso tombstone, the Orpheus relief, the Discobolos of Myron as restored by Furtwängler, the Laocoön, the Dying Gaul, the Borghese warrior, Demosthenes, Sophocles, Augustus in military dress, the so-called Germanicus, the Satyr and Mænad relief, twenty-one busts of Greek sculpture and Greek and Roman authors and emperors, two Tanagra figurines, and the Nike of Paionios inscription; also models of the Acropolis of Athens, the east pediment of the Zeus temple at Olympia, the Victories of Paionios and Samothrace, and the columns of the temple of Castor in the Forum at Rome; and relief maps of Athens and Rome.

It has facsimile reproductions of the two Vaphio gold cups, the so-called Nestor's cup, the lion-hunt sacrificial knife, a gold mask, a diadem, and a series of smaller gold objects found in Mycenæan graves; 50 original Greek and Roman coins; a good-sized collection of specimens of building-stones used in Roman structures, inscriptions, vases, lamps, cinerary urns, locks and keys, articles of dress, and specimens of Roman glass.

The collections embrace further:

Laloux's restorations of Olympia, Defrasse's restorations of Epidaurus, Pontremoli's restoration of Pergamon, Weichardt's restorations of Pompeii, and Zeiller & Diehl's restorations of the palace of Diocletian at Spalato. Fenger's 8 colored plates of Doric Architecture; 13 Carbon photographs of Greek architecture; 9 large photographs of Roman architecture and scenes; Piranesi's large engravings of the Columns of Trajan and Marcus Aurelius; a complete set (665 so far) of Brunn's plates of Greek and Roman sculpture; 55 Braum's Carbon photographs of the Parthenon sculptures; a complete set (149) of the Furtwängler-Reichhold plates of Greek vases; 80 colored plates (Lau, Genick, and Furtwängler's) of Greek vases; a complete set (137) of the Hermann-Bruckmann plates of ancient paintings; 48 colored plates of Pompeian walls; 6 colored plates of the Odyssey paintings found in Rome; a complete set (148 plates) of Antike Denkmäler of the German Archæological Institute; illustrations of ancient architecture, sculpture, and paintings; 750 photographs illustrating Roman topography and life; 254 Underwood stereoscope views of Greece, Italy, and Sicily.

The classical museum is located in Fraser Hall, south wing, second floor.

The collections are constantly being enlarged, and are always open to students and visitors for inspection and study.

VERTEBRATE PALEONTOLOGY.

Professor ALLEN.
Mr. MARTIN.

The museum of vertebrate paleontology furnishes not only materials ordinarily lacking for the rounding out of the education of the general student, but offers excellent facilities for research work in the anatomy and phylogeny of extinct vertebrate life. The collections from the rich Kansas fields are especially complete, and the museum includes also representatives from all of the principal geological formations. The collections are distributed about as follows:

Tertiary, 200 genera, 700 species.

Cretaceous, 60 genera, 200 species.

Jurassic, 10 genera, 30 species.

Triassic, 25 genera, 75 species.

Permocarboniferous, 20 genera, 100 species.

From the Tertiary of Kansas, Wyoming, South Dakota, Oregon, and Colorado nearly all of the known genera are represented. Of the Cretaceous animals there are hundreds of specimens, including not a few of exceptional perfection and completeness. There is a very good collection from the John Day region, Oregon, and one of the three collections of Patagonian specimens in the country. The collection of reptiles and birds is particularly valuable.

ZOOLOGICAL COLLECTIONS.

Professor ALLEN.

A representative collection of marine invertebrates from the Atlantic and Pacific coasts and from Bermuda provides material for study and investigation. Very large additions to these collections were made by recent expeditions to Puget Sound.

In the conchological cabinet are included nearly 1,000 species of shells, from all parts of the world.

PALEOBOTANY.

Mr. MARTIN.

The collection in paleobotany is especially rich and valuable, representing thousands of specimens. The Dakota and Comanche Cretaceous series are the most extensive, and include many types of species and undescribed forms. In addition to the collection of Tertiary plants, there is a very large and valuable series of Carboniferous plants from Kansas, including many new forms. The collection is placed with that of paleontology. The purchase of a number of cases has made it possible to put on exhibition many more specimens than have been before open for public inspection.

COLLECTION OF MAMMALS, BIRDS, FISHES, AND REPTILES.

Mr. BUNKER.

A practically complete exhibit of the larger mammals indigenous to the North American continent, explained with accompanying photographs and labels, is to be seen in panorama on the first floor of the museum of natural history. The collection contains specimens from the whole of the North American continent, including Alaska and its surrounding islands, and Greenland as well.

The greater part of the mammal collection is preserved in the form of scientific or study skins. It comprises several thousand specimens, including skeletons and skulls, which are catalogued and so arranged that easy access may be had by those especially interested in this work.

The ornithological collection, occupying the whole of the second floor, contains 10,000 specimens, of which number 2,300 are mounted and on exhibition. The remainder, as in the case of the mammal collection, constitutes the study collection.

A series of bird groups, arranged in their natural habitat, and according to their respective life zones, is in the course of construction. This work, when completed, is intended to instruct fully in the breeding, nesting and life habits of the birds from the tropics to the arctics.

The collection of fishes and reptiles, to be found on the basement floor, while incomplete for the fauna of North America, is very complete for the state of Kansas. Both collections are preserved in liquid, and have been classified and catalogued for the ready use of the students.

PUBLICATIONS.

Director: A. T. WALKER.

Division Committee: Chancellor STRONG, F. E. KESTER, G. C. SHAAD, F. R. HAMILTON, G. O. FOSTER, L. N. FLINT, F. H. HODDER, F. B. DAINS.

The Division of Publications has general supervision of all publications issued by the University. These publications consist of the following series, each in charge of a special committee:

Biological Series: Chairman, S. J. Hunter.

Catalog: Chairman, D. L. Patterson.

Engineering Bulletins: Chairman, G. C. Shaad.

Humanistic Studies: Chairman, F. H. Hodder.

Science Bulletin: Chairman, F. E. Kester.

University Extension Bulletins: Chairman, F. R. Hamilton.

University News-Bulletin: Chairman, L. N. Flint.

All communications, including requests for exchanges, may be addressed to the director of the division.

The reports of the Geological Survey, although prepared by members of the University Faculty, are published under a special statute; there-

fore they are not University publications. The list of these reports is given under Geological Survey.

THE BIOLOGICAL SERIES contains reports of the Biological Survey (see p. 407), and biological studies of economic value, such as have appeared in the Entomological Studies. The following, which have appeared as Bulletins of the Department of Entomology, are sent free to any citizen of Kansas upon application:

- Two Grain Insects. *V. L. Kellogg and F. H. Snow.* 1885.
- The Horn Fly of Cattle. *V. L. Kellogg and F. H. Snow.* 1889.
- The More Destructive Grasshoppers of Kansas. *S. J. Hunter and F. H. Snow.* 1897.
- Scale Insects Injurious to Orchards. *S. J. Hunter.* 1898.
- Alfalfa, Grasshoppers, Bees; Their Relationships. *S. J. Hunter.* 1899.
- The Honey Bee and its Food Plants in Kansas. *S. J. Hunter.* 1899.
- The Green Bug and its Natural Enemies. *S. J. Hunter.* 1909.
- Orchard Problems and How to Solve Them. *H. B. Hungerford.* 1912.
- Report of Results of University Research Commission on "Horse Plague." *S. J. Hunter; A. L. Skoog, M. D.; Wm. K. Trimble, M. D.; N. P. Sherwood.* 1913.
- Formulas for Destroying Injurious Insects and Plant Diseases. *Walter H. Wellhouse.* 1916.
- Studies in Kansas Insects. *P. W. Classen, R. H. Beamer, C. H. Kennedy, P. W. Lawson, W. H. Wellhouse.* 1917.

THE ENGINEERING BULLETINS present the results of investigations by the Engineering Experiment Station (See p. 406).

The following bulletins have been published in this series, but the first three are out of print:

- BULLETIN No. 1. NOVEMBER, 1909.
A Ballistic Electrodynamometer Method of Measuring Hysteresis Loss in Iron. *Martin E. Rice and Burton McCollum.*
Voltage Regulation of Alternators. *Burton McCollum.*
- BULLETIN No. 2. JULY, 1912.
Natural Gas: Its Properties, Its Domestic Use, and Its Measurement by Meters. *P. F. Walker.*
- BULLETIN No. 3. JANUARY, 1913.
Kansas Fuels: Coal, Oil, and Gas. Heating Values and Proximate Analysis of Coal. *P. F. Walker and Walter Bohnstengel.*
Discussion of Sulphur Content of Bituminous Coal. *Walter Bohnstengel.*
- BULLETIN No. 4. OCTOBER, 1913.
The Organization and Work of the Engineering Experiment Station. *G. C. Shaad*
Vocational Education in Kansas. *P. F. Walker.*
- BULLETIN No. 5.
The Ground Water Supplies of Kansas. *C. A. Haskins and C. C. Young.*
- BULLETIN No. 6. (Partial reprint of No. 3.)
Kansas Fuels: Coal, Oil, and Gas. *P. F. Walker and Walter Bohnstengel.*
Economic Effects of Washing Coal from the Kansas State Mine. *C. M. Young.*
- BULLETIN No. 7.
The Removal of Iron from Municipal Water Supplies. *J. W. Schwab.*
The Measurement of Electrical Energy, Electricity Meters, Rates for Electrical Energy. *Geo. C. Shaad and C. A. Johnson.*

There is now in press a bulletin on Sewage Disposal in Kansas, and one on Gas Analysis.

HUMANISTIC STUDIES is a series devoted to the presentation of the results of research along humanistic lines. The numbers are issued at irregular intervals. Each number is a complete monograph, and its price is determined by its size and the cost of publication.

VOLUME I.

- No. 1. Studies in the Work of Colley Cibber. *DeWitt C. Croissant.* October, 1912. 70 pages. 50 cents.
- No. 2. Studies in Bergson's Philosophy. *Arthur Mitchell.* January, 1914. 115 pages. 75 cents.
- No. 3. Browning and Italian Art and Artists. *Pearl Hogrefe.* May, 1914. 77 pages. 50 cents.
- No. 4. The Semantics of -mentum, -bulum, and -culum. *Edmund D. Cressman.* January, 1915. 56 pages. 50 cents.

VOLUME II.

- No. 1. Oriental Diction and Theme in English Verse, 1740-1840. *Edna Osborne.* May, 1916. 141 pages. 75 cents.
- No. 2. The Land Credit Problem. *George E. Putnam.* December, 1916. 107 pages. 75 cents.

THE SCIENCE BULLETIN (continuation of the *Kansas University Quarterly*) is maintained by the University as a medium for the publication of the results of original research by members of the University. Individual papers are printed and issued as separates. When a sufficient number of papers has been published they are bound together in volumes for the purpose of exchange with other journals. The price of subscription is three dollars a volume. The price of separates varies with the number of pages. Some parts of the *Quarterly*, and separates of all articles in the *Science Bulletin*, beginning with volume V, No. 20, except volume VII, Nos. 1, 2 and 16, may be obtained by exchange or purchase. Information may be obtained by addressing *Science Bulletin*. Ten volumes of the *Quarterly* and ten of the *Bulletin* have been published.

UNIVERSITY EXTENSION BULLETINS in part make announcements of the work of the Extension Division, in part give information on public questions. Among others the following have appeared:

Playgrounds and Parks.
Commission Plan of City Government.
Training for Debating.
Announcement of Extension Lecture Courses.
Recall of Judges.
Constructive Juvenile Effort in Kansas.
Lectures Delivered at the Merchants' Week (1914).
Lectures Delivered at the Merchants' Week (1915).
Announcement Kansas High-school Debating League (annual).
Correspondence-study Courses (annual).

THE UNIVERSITY NEWS-BULLETIN is issued monthly. It is primarily a medium for carrying to the newspapers of the state information about the instructional and state service work of the University. In this series have been included:

Four numbers devoted to the Hattie E. Lewis Memorial Essays in Applied Christianity.
Two annual and two biennial reports of the Board of Administration.
Ten bulletins covering special "weeks" at the University.

STATE SERVICE WORK.

Director: _____
Division Committee: _____

ENTOMOLOGICAL FIELD WORK.

Professor HUNTER, State Entomologist.

From 1872 to 1907 the University conducted an entomological investigation throughout the state. This investigation was directed, in part, to problems referred to the University for solution by various interests of the state, and, in part, to fundamental research problems presented by such investigations.

In 1907 the legislature created the State Entomological Commission. The character and scope of the work of this Commission is defined in the following section of the law:

"Sec. 2. That this State Entomological Commission shall consist of the secretary of the State Board of Agriculture, secretary of the Kansas State Horticultural Society, and the professor of entomology of the University of Kansas, and the professor of entomology at the State Agricultural College, and the fifth member to be a nurseryman actively engaged in the nursery business within the state of Kansas, to be appointed by the governor, whose term of office shall be two years. The secretary of the State Board of Agriculture shall be chairman of this Commission and the commissioners' secretary shall be the secretary of the State Horticultural Society.

"Sec. 4. That it shall be the duty of said state entomologists, under the control of the State Entomological Commission, to seek out and suppress pernicious insect pests and injurious and contagious plant diseases hereinbefore mentioned as destructive to the horticultural and agricultural interests of this state, and conduct experiments when necessary to accomplish that end."

Accordingly, for expediency in the conduct of its field work, the Entomological Commission has assigned the southern half of the state to the state entomologist at the University of Kansas, Lawrence, and the

northern half to the state entomologist at the Agricultural College, Manhattan. Inquiries from the southern half of the state should, therefore, be directed to the University of Kansas; inquiries from the northern half to the Kansas Agricultural College.

Publications from Office of the State Entomologist.

- Biennial Reports. 1907-1908; 1909-1910; 1911-1912; 1913-1914; 1915-1916.
 Circular No. 1. Law Creating the Commission.
 Circular No. 2. Information in Regard to Remedial Measures against Scale Insects.
 Circular No. 3. The San José Scale.
 Circular No. 4. Formulas for Destroying Injurious Insects and Plant Diseases.
 Circular No. 5. White Pine Blister Rust. Quarantine.

WATER ANALYSIS.

Assistant Professor YOUNG.

The legislature of 1907 and 1909 passed laws giving to the State Board of Health a large degree of control over all public water supplies and sewerage systems of the state and charging this board with the preservation of the purity of the waters of the state, for the protection of the public health. The legislature of 1915 passed a law giving the State Board of Health power to make rules and regulations for the collection of samples and analysis of water furnished to the public for domestic consumption by municipalities, corporations, common carriers, or individuals, and located the water laboratory at the University. The secretary of the State Board of Health, the state sanitary engineer and his assistants, the director of the water laboratory and his assistants, constitute the division of water and sewage of the State Board of Health.

STATE CHEMICAL RESEARCH.

Professor WHITAKER.

Included in the Department of Chemistry is the Division of State Chemical Research, which has for its object the study of those problems of Kansas, municipal or industrial, which may lend themselves to chemical investigation. In addition to its own problems, this division coöperates with other University activities which are engaged in state service work.

ANALYSIS OF FOOD AND DRUGS.

Professor BAILEY, Chemist.
 Professor SAYRE, Pharmacist.

The Kansas food and drugs act of February 14, 1907, requires analyses of food products to be made by the chemistry departments of the University and the Agricultural College, analyses of drugs to be made by the School of Pharmacy of the University. These analyses are made upon samples of foods and drugs collected by the special food and drug inspectors appointed by the State Board of Health. A special laboratory has been fitted up for the analysis of food and another for the analysis of drugs.

The chemists in these laboratories not only make examinations of the samples that are sent in by the official inspectors, but they devote considerable time to a study of the condition of the market, to see if adulteration exists.

The Departments of Bacteriology and Entomology collaborate with the Department of Chemistry and the School of Pharmacy in making reports on food and drugs.

WEIGHTS AND MEASURES.

Assistant Professor STIMPSON.

In 1868 the state law designated the Chancellor *ex officio* state sealer of weights and measures. The University has in its custody complete sets of the different standards of weights and measures, together with the necessary equipment of balances and other apparatus to make them available for use. These standards are of high accuracy and are certified by the United States government through the National Bureau of Standards, and are by law the authorized public standards of the state. A deputy state sealer, who is a member of the Faculty, gives a large part of his time to this work. He compares and adjusts, free of charge, all county, municipal, and other official standard weights and measures. He will also compare and adjust weights and measures for business houses, institutions, and others who may desire such comparisons made. For this work a small fee, which is set by law, is charged.

ENGINEERING EXPERIMENT STATION.

FRANK STRONG, Ph. D., Chancellor of the University.
 P. F. WALKER, M. M. E., Director, Mechanical Engineering.
 GEO. C. SHAAD, E. E., Electrical Engineering.
 H. A. RICE, C. E., Mechanics and Civil Engineering.
 GOLDWIN GOLDSMITH, Ph. B., Architectural Engineering.
 A. C. TERRILL, M. S., Mining Engineering.
 W. A. WHITAKER, M. A., Chemical Engineering.

ORGANIZATION AND PURPOSE.

Engineering experiment stations have been organized in several of the technical schools in the United States, their purposes, in the main, being as follows: to correlate and systematically group together the results of scientific investigations as they are conducted under the various departments of the schools; to plan, organize, and direct additional work to be carried out by the departments of the school along lines which will be of practical benefit to engineers in general and to the state or the locality in which the school is situated in particular; to act in stimulating and elevating the engineering education given by the school; and to arrange for the publication and distribution of the results of engineering and industrial research work. The University of Kansas organized such a station in 1908, with the Dean of the School of Engineering as Director and the balance of the staff made up of the Chancellor of the University and the heads of the various engineering departments. The personnel of the present staff is given above. Up to the present time the financial support of the University of Kansas Engineering Experiment Station has been through the appropriations granted to the various departments of the Engineering School, and the work of investigation has been carried on by men regularly appointed to the instructional staff, but relieved of teaching duties to some extent in order to give time for special investigations.

Subjects on which investigations are in progress are as follow:

The adaptability of Kansas rock to road building.
 A study and classification of the different commercial bituminous paving materials.
 Methods of waterproofing cement mortars and concrete.
 General survey of concrete aggregate, sand and stone, of the state.
 Investigation as to time of removal of forms from concrete.
 The effect of temperature on the time of setting of concrete.
 An investigation of the highway bridges of the state, and improvements in design.
 The effect of repeated stresses on concrete.
 Investigation of stresses in railroad track.
 Study of railroad track drainage.
 Investigation of paving brick of Kansas.

Results of analyses of the surface waters of Kansas.

Investigation of methods of sewage disposal suited to conditions in Kansas.

The relation of water supplies, water purification, sewerage, and sewage disposal to the public health of Kansas cities.

The relation of air supplies to public health problems.

The purification of water used in swimming pools.

An investigation of the suitability of the sands of Kansas as filter media in water purification.

The supply of electricity for lighting and power in small cities.

The fixing of fair rates for electricity when furnished by small plants.

Data covering "white way" lighting systems, as such systems are adapted to Kansas cities.

An investigation of the starting of synchronous motors and the operating characteristics of such motors.

Investigation of losses in automobile transmission gears.

The burning of low-grade fuel in boiler furnaces.

Effects of moisture injected into the cylinders of gasoline engines.

The properties of lubricating oils.

Survey of Kansas coals with regard to improvement by washing.

Efficient concentration of lead-zinc ores.

School buildings, grade and high schools, with particular reference to fireproofing, lighting, ventilation, and sanitation.

Courthouses, and other county and municipal buildings.

The preparation of standard building laws suitable for communities of different sizes.

Survey of industries of the state and of industrial resources.

Investigation of power and heat distribution in cement mills.

STATE SURVEYS.

Director: FRANK STRONG, Ph. D.

Division Committee: _____

BIOLOGICAL SURVEY.

Professor HUNTER, Entomologist.

Professor ALLEN, Zoölogist.

Assistant Professor STERLING, Botanist.

Each summer the departments of botany, zoölogy, and entomology send out observation parties to study the forms of life constituting their respective fields. These parties are composed of biologists and advanced students of biology, mainly from the University of Kansas. The records of their observations are issued in separate reports and in the science bulletins of the University. By means of the collections made it is hoped to secure for the museums a complete representation of the animal and plant life of the state.

GEOLOGICAL SURVEY.

RAYMOND C. MOORE, State Geologist.

PAUL TEETOR, Ceramic Chemist.

The University Geological Survey of Kansas was organized by the Board of Regents of the University in 1894, under the general authority given them by law, and was given especial sanction and authority by legislative enactment from 1897 to 1907, when the present law was passed. The object is to accomplish a geological survey of the state as rapidly as possible, giving a complete exposition of its geological and mineralogical resources, including all subjects of economic and scientific importance.

By provision of law the Chancellor of the University is *ex officio* director of the Survey, and a member of the Department of Geology is state geologist. It is contemplated that the work will be done principally by members of the University Faculty and advanced students, so that the cost to the state will be a minimum. The results already obtained have been of great value to the state, especially in the development of coal, oil, gas, Portland cement, gypsum and its products, and clay manufactories.

The stratigraphy of the east third of the state has been worked out in great detail, and also the fauna and flora of the area have been studied—to such an extent, indeed, that geologists of adjoining states now recognize our stratigraphic and paleontologic studies as being the most nearly complete of any within the great Mississippi valley area.

Recently the Survey has entered upon the investigation of Kansas clays as a special undertaking. A laboratory was built and equipped for this purpose by direct legislative appropriations. While other features of geological work are continued, it has seemed desirable for the past few years that the Survey should especially emphasize clay investigations.

Work was begun on the Survey in 1893 and has been carried forward steadily ever since. Throughout this time from five to twelve assistants have been doing field work during summer vacations. The laboratory work and the writing of reports have been done principally throughout the remaining nine months of the year. The subjects thus far studied and reported upon are given in the following list of publications. Other subjects have been studied, but not yet sufficiently for the completion of reports.

Publications of the State Geological Survey.

The Survey has already published the following reports, all of which are for free distribution, the recipient paying transportation charges. (Those marked with a star are out of print.)

- Volume I, 1896.—Reconnaissance Report on General Stratigraphy of Eastern Kansas.*
- Volume II, 1897.—General Geology of Western Kansas.*
- Volume III, 1898.—Special Report on Coal. 28 cents.
- Volume IV, 1898.—On Upper Cretaceous Paleontology.*
- Volume V, 1899.—Special Report on Gypsum and Gypsum Cement Plasters. 16 cents.
- Volume VI, 1900.—Carboniferous Invertebrates and Cretaceous Fishes. 28 cents.
- Volume VII, 1902.—Mineral Waters. 20 cents.
- Volume VIII, 1906.—Special Report on Lead and Zinc. 28 cents.
- Volume IX, 1909.—Special Report on Oil and Gas. 32 cents.
- Volume X, 1910.—A Special Report on Mine Explosions, in preparation.
- Report on Mineral Resources of Kansas for 1907. 4 cents.
- Report on Mineral Resources of Kansas for 1898.*
- Report on Mineral Resources of Kansas for 1899. 4 cents.
- Report on Mineral Resources of Kansas for 1900, 1901. 5 cents.
- Report on Mineral Resources of Kansas for 1902.*
- Report on Mineral Resources of Kansas for 1903. 3 cents.
- Bulletin I.—Well Waters of Kansas for 1913. 6 cents.
- Bulletin II.—Crystalline Rocks in Kansas. 2 cents.

Since the parcel-post law became effective the postal rates for near-by destinations are materially reduced from the above figures, but no definite figures can be quoted, as the rates vary with distances.

Volume I is devoted entirely to reconnaissance work in stratigraphy and a preliminary description of the general geology of eastern Kansas, with a short description of the oil and gas fields of the state and a preliminary catalog of invertebrate fossils found in the Carboniferous age.

Volume II is a similar description of the stratigraphy and other features of general geology of western Kansas, being a companion to volume I. It has a short chapter on some phases of vertebrate paleontology.

Volume III is a special report on coal, giving a general account of the stratigraphy of eastern Kansas, the most extensive yet published, and a detailed account of the coal-bearing strata of the state, methods of mining, the chemical and physical properties of Kansas coal, and other subjects of a like nature.

Volume IV is devoted entirely to the paleontology of the Upper Cretaceous. It is profusely illustrated with plates and cuts of vertebrate fossils from western Kansas.

Volume V is a special report on gypsum and gypsum cement plasters, giving the results of about three years' investigation. This is probably the best account yet published on this interesting product.

Volume VI is the second volume on paleontology. It deals with Carboniferous invertebrates and Cretaceous fishes.

Volume VII is devoted to the mineral waters of the state, and gives a description not only of the mineral waters of Kansas, but of mineral waters in general.

Volume VIII is a special report on lead and zinc.

Volume IX is a special report on oil and gas, with many maps and geological sections and a lithographic geologic map of the state.

Volume X is a special report on coal-mine explosions, giving a history and tabulation of all recorded mine explosions of the world, and their causes, when known, followed by extensive study of mine gases, coal dust, modes of ignition and other causes leading to mine explosions and mine fires, with suggestions and recommendations for prevention of the same. Ready soon.

Bulletin I is devoted to a discussion of well waters of the state. It is written in a plain, every-day style, for the layman rather than for the scientist. It describes briefly where water may be had by digging, and where it is useless to dig wells.

Bulletin II, Crystalline Rocks in Kansas. An investigation into the question of possible subsurface crystalline rocks in certain parts of the state.

The series of annual reports began with a report on the mineral productions of the state for 1897 and was continued to 1903. The reports for 1900 and 1901 were issued jointly. Largely they are repetitions of the same subjects, as each of them contains a complete summary of the total state production to date. They cover the subjects of gold, silver, lead and zinc, coal, oil, gas, clay products, gypsum, hydraulic and Portland cements, building stone, and salt.

The report for the year 1902 was delayed in publication and thereby admitted a short report on the extraordinary flood of the Kansas river in May and June, 1903. The report for 1898 contains an extended description of Kansas salt as a special article, and similarly the report for 1902 has a specially prepared chapter on Portland cement.

Since the year 1910 work has been confined principally to the completion of a stratigraphic and paleontologic survey of the Permian of Kansas, and to an exhaustive study of the clays of the state. Neither of these studies is yet completed. The legislature of 1911 made a special appropriation for the erection and equipment of a clay-testing laboratory. Since its completion the Survey is prepared to test all clays of the state by all methods known to science and the arts. It is proposed to prosecute the work of testing Kansas clays as rapidly as possible, and to issue reports on results obtained from time to time as the work progresses. The first clay bulletin was on the Dakota Clays of Kansas.

SECTION XIII.

Roll of Students, etc.

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ROLL OF STUDENTS.

GRADUATE SCHOOL.

- *Adams, Frances, A. B. '18, University of Kansas; Mathematics; Lawrence.
 Amos, Thyrsa Weáltha, A. B. '17, University of Kansas; Education; *Shawnee, Okla.*
 *Anderson, Gladys, A. B. '18, University of Kansas; History; Lawrence.
 Archer, Lettie Gertrude, A. B. '17, Ottawa University, English; *Green City, Mo.*
 Armstrong, Beulah May, A. B. '17, Baker University; Mathematics; Hutchinson.
 Ashton, Annette Hughes, A. B. '17, University of Kansas; Bacteriology; Lawrence.
 Berger, Emily V., A. B. '14, University of Kansas; Chemistry; Halstead.
 *Bingham, Bernice S., A. B. '18, University of Kansas; Mathematics; Wichita.
 Blair, John Alvin, A. B. '17, University of Kansas; Education; Lawrence.
 *Buffington, Ralph M., A. B. '18, University of Kansas; Chemistry; Ness City.
 Cameron, Anna E., A. B. '18, Southwestern University; History; Winfield.
 Chamberlain, Daisy Ethel, A. B. '10, Morningside College; English; *Drexel, Mo.*
 Cook, Virgil Ruby, B. S. '15, Pittsburg State Normal; Chemistry; Mulberry.
 *Coons, Glenn C., A. B. '18, University of Kansas; History; Lawrence.
 Duncan, Mabel, A. B. '17, University of Kansas; Romance Languages; Lawrence.
 Ellis, Frances Maud, A. B., '15, University of Kansas; Sociology; El Dorado.
 Fackler, Harry Lee, B. S. '16, Monmouth College; Entomology; Lawrence.
 *Garman, Helen Rose, A. B. '18, University of Kansas; Mathematics; Lawrence.
 Garvan, John Diller, B. S. '10, University of Kansas; Engineering; Lawrence.
 Geisen, Nora Belle, A. B. '11, Baker University; English; Leavenworth.
 Geselbracht, Franklin Hermon, Ph. D., Leipzig; Philosophy; Lawrence.
 Gregory, Wheeler Russell, A. B., '15, University of Kansas; Education; *Kansas City, Mo.*
 Greider, Harold William, B. S. '16, Washburn College; Chemistry; Topeka.
 Hargett, Ray Hudson, A. B. '17, University of Kansas; Chemistry; Lawrence.
 *Hendrickson, Ethel, A. B. '18, University of Kansas; English; Lawrence.
 Henry, Gladys Margaret, A. B. '16, University of Kansas; English; Lawrence.
 *Helmer, Sophia B., A. B. '18, University of Kansas; Home Economics; Ft. Scott.
 *Hoffman, William E., A. B. '18, University of Kansas; Entomology; Lawrence.
 Holmes, Mary Ise, A. B. '12, University of Kansas; Sociology; Lawrence.
 Holmes, Opal A., A. B. '17, University of Kansas; Journalism; Lawrence.
 Hoover, John Hevner, A. B., McPherson College; Mathematics; Lawrence.
 Horsley, Hazel, A. B. '17, Friends University; Mathematics; Wichita.
 Hull, Lewis Madison, A. B. '17, University of Kansas; Physics; Norton.
 Hyre, Myrtle Ethel, A. B. '12, University of Kansas; Home Economics; Lawrence.
 Jaggard, Guy Hathaway, A. B. '13, Emporia State Normal; Education; Lawrence.
 Johnson, Carl Luther, B. S. '14, Washburn College; Chemistry; Topeka.
 Kirby, Samuel Sylvester, A. B. '17, Kansas State Normal; Physics; Humboldt.
 Laird, Paul E., Epworth University; Chemistry; Whiting.
 Larson, Esther Johanna, A. B. '13, Bethany College; History; Scandia.
 Lawson, Paul Bowen, M. S. '17, University of Kansas; Entomology; Lawrence.
 Leonard, Annette, A. B. '12, Southwestern College; English; Manhattan.
 Long, Walter Sterritt, A. M. '13, University of Illinois; Chemistry; Lawrence.
 Lovejoy, Owen Harrison, A. B. '13, University of Kansas; Botany; Lawrence.
 Lytle, Harold Hopkins, A. B. '17, University of Kansas; Economics; Lawrence.
 Marm, Anna, A. B. '09, Bethany College; Mathematics; Lindsborg.
 Martindale, Nell Minnette, A. B. '12, University of Kansas, Bacteriology; Lawrence.
 Mason, Benjamin Allen, A. B. '17, Princeton; Sociology; Salina.
 Miller, Alfred Joseph, A. B. '17, Midland College; Journalism; *Surprise, Neb.*
 Miller, Earl Brenneman, A. M. '16, University of Colo.; Mathematics; *Boulder, Colo.*
 Miller, Forrest Jennings, A. B. '16, University of Kansas; Geology; Sebetha.
 Mills, Clarence, A. B. '17, University of South Dakota; Physiology; Lawrence.
 *Morgan, Howard C., A. B. '18, University of Kansas; English; Kansas City.
 Murray, Agnes Anderson, A. M. '11, University of Kansas; Home Economics; Lawrence.
 *McHenry, Lloyd A., A. B. '18, University of Kansas; Sociology; Baldwin.
 Osborne, Edna P., A. M. '14, University of Kansas; English; Lawrence.
 Piotrowski, Edith Agnes, A. B. '16, University of Kansas; English; Fort Scott.
 Prather, Orra, A. B. '17, Southwestern University; English; Winfield.
 Ramsey, James Blaine, A. B. '16, University of Kansas; Chemistry; Lawrence.
 *Rickard, Marjorie A., A. B. '18, University of Kansas; French; Lawrence.
 *Roberts, Mary, A. B. '18, University of Kansas; Journalism; Lawrence.
 Rodkey, Fred Stanley, A. B. '17, University of Kansas; History; Blue Rapids.
 Schenk, Mary Lillian, A. B. '17, University of Kansas; Education; Neosho Rapids.
 Sellers, James Lee, A. B. '16, University of Kansas; Education; Lawrence.
 *Shafer, Anne N., A. B. '18, University of Kansas; History; Olathe.
 Sheppard, Hubert, A. M. '17, Chicago University; Philosophy; *Normon, Okla.*

*Seniors who have completed within ten credit hours sufficient work for the A. B. or B. S. Degree, and are doing graduate work.

GRADUATE SCHOOL—*continued*

- *Smith, Mary Ellen, A. B. '18, University of Kansas; Mathematics; Pleasanton.
 Spangler, Irma Bauman, A. B. '14, University of Kansas; History; Lawrence.
 *Sperry, Charles C., A. B. '18, University of Kansas; Entomology; Beverly.
 Spicer, Miriam Russell, A. B. '17, University of Kansas; Botany; Lawrence.
 Spotts, Mrs. Delphia Johnson, A. B. '12, University of Kansas; Bacteriology; Lawrence.
 Stateler, Ernest Salathial, B. S. '17, University of Kansas; Chemistry; Minneola.
 Stewart, Margaret S., A. B. '15, Cooper College; German; Lawrence.
 Swanson, Simon P., A. B. '17, Friends University; Sociology; Wichita.
 Swingle, Wilbur Willis, A. M. '17, University of Kansas; Zoölogy; Lawrence.
 Talbot, Homer, A. B., University of Wisconsin; Sociology; Lawrence.
 Terry, George Sylvester, A. M. '17, University of Kansas; Zoölogy; Chanute.
 Testerman, Iva Bernice, A. B. '17, University of Kansas; History; Lawrence.
 Thompson, Gordon Bennett, Boston University; Sociology; Lawrence.
 Ulrich, Ethel Lenore, A. B. '15, University of Kansas; Romance Language; Lawrence.
 *VanArsdale, Mary E., A. B. '18, University of Kansas; Home Economics; Lawrence.
 Vogt, Alice Nadene, A. B. '17, McPherson College; Education; *Versailles, Mo.*
 Weiss, May, A. B. '17, Fairmount College; German; Wichita.
 Westerfield, Marie B., A. B. '15, Kansas City University; Sociology; *Kansas City, Mo.*
 White, Lilla May, A. B. '05, Baker University; Sociology; Baldwin.
 Witte, Lucille, A. B. '15, University of Kansas; Zoölogy; *Cushing, Okla.*
 *Woodard, Parke, A. B. '18, University of Kansas; Chemistry; Wichita.
 *Young, Raymond A., A. B. '18, University of Kansas; Chemistry; Wichita.

GRADUATES, 87.

*Seniors who have completed within ten credit hours sufficient work for the A. B. or B. S. Degree, and are doing graduate work.

THE COLLEGE.

SENIORS.

- Abel, Clara Mildred; Lawrence.
 Adams, Frances Elizabeth; Lawrence.
 Anderson, Eva-Bell; Lawrence.
 Anderson, Gladys Camilla; Lawrence.
 Anderson, Lind McKinley; Downs.
 Arnold, Brandt George; Newton.
 Bagby, Howard; Lawrence.
 Baker, Violet H.; Topeka.
 Bassler, Charles Earle; Lawrence.
 Bean, Marjorie Lillian; Lawrence.
 Beebe, Georgia Alice; Burns.
 Bennie, Herbert Stewart; Almena.
 Beverstock, Ruth Lanore; Lawrence.
 Bingham, Sarah Bernice; Wichita.
 Black, Harold C.; Kansas City.
 Blasdel, Harry Emert; Hutchinson.
 Blurton, Nellie Florence; Bucklin.
 Bowlby, Alice; Natoma.
 Brauer, Alfred Charles; Newton.
 Brown, George Austin; Baldwin.
 Brown, Joyce Adine; Olathe.
 Brownlee, Aleta Marie; Salina.
 Brownlee, Mary Angelina; Stafford.
 Bryan, Jennie Maude; Waterville.
 Buchanan, Marie Estella; Lawrence.
 Buffington, Ralph Mulvaney; Ness City.
 Bumann, Alice; Lawrence.
 Bunger, Frances May; Alta Vista.
 Burgert, Eran Omer; Lawrence.
 Calene, John Lucian; Sylvan Grove.
 Carman, Justice Neale; Herington.
 Carnie, Kathleen; *Kansas City, Mo.*
 Carr, Pauline Ruth; Augusta.
 Carson, Hazel Ellene; Ashland.
 Cazier, Lawrence W.; Wakarusa.
 Champlin, Paul Bertrand; Canton.
 Chandler, Horace Frederick; Atchison.
 Church, Harry Lester; Pittsburg.
 Clark, Helen Eugenia; *Kansas City, Mo.*
 Clayton, Ross Herbert; Lawrence.
 Coffelt, Gola William; Blue Mound.
 Cole, Mrs. Dorothy Walker; Lawrence.
 Cole, Warren Henry; Clay Center.
 Collins, Lucile; Lawrence.
 Cook, Hazel Mearl; Lawrence.
 Cook, Persis Bell; Lawrence.
 Coons, Glenn Claypool; Lawrence.
 Cooper, Rebekah Blackwood; Wichita.
 Corel, Gladys Fay; Lawrence.
 Cory, Eugenia Frances; Lawrence.
 Cotter, James Rachel; *Kansas City, Mo.*
 Cowgill, Elvyn Spencer; Lawrence.
 Cox, Harold Bernard; Cedar Vale.
 Curry, Ralph Frey; Lawrence.
 Daniell, Lola Lee; Lawrence.
 Daniels, Mildred; Lawrence.
 Daum, Frieda; Lawrence.
 Davis, Donald Dwight; Downs.
 Davis, Mary Alice; Chanute.
 Deibel, Marie; Lawrence.
 Dennis, Foster Leonard; Stockton.
 Dolbee, George; Lawrence.
 Dolecek, Edna Helen; Lawrence.
 Douthitt, Bessie Price; Lawrence.
 Dring, Louilla Ruth; Lawrence.
 Dryden, Lockie Louise; Larned.
 Dunne, Marie Meta; Wichita.
 Edmonson, Ellen; Newton.
 Eitzen, Abram Clement; Hillsboro.
 Emerson, Ralph Waldo; Osborne.
 Endacott, Ruth Beatrice; Lawrence.
 Ernst, Hazel Corinne; Atchison.
 Fahringer, Stephen Martin; Lawrence.
 Faragher, Ida Keeley; Lawrence.
 Ferg, Gertrude; Girard.
 Flynn, Paula; Parsons.
 Fogarty, Katherine; Lawrence.
 Forseythe, Anna Elizabeth; Edgerton.
 Fox, Helen J.; Lawrence.
 Friedberg, Fay Sarah; Topeka.
 Friend, Russell DeVere; Lawrence.
 Frost, Arl Haskett; Lawrence.
 Fuger, Golda Margaret; Wathena.
 Fuller, Ilde Wilson; Lawrence.
 Galle, James Lamer; McPherson.
 Gardiner, Ruth Bernice; Fredonia.
 Garman, Helen Rose; Lawrence.
 Gaskill, Gussie Esther; Lawrence.
 Giger, Harold Henry; Elmdale.
 Good, Donald Cameron; Hiawatha.
 Gorrill, Clarence Marshall; Lawrence.
 Gossard, Agnes DeMar; Oswego.
 Gray, Helen Emily; Paxico.
 Griffith, Marion Elizabeth; *Kansas City.*
 Griffiths, Arline; Lawrence.
 Hackerott, Agnes Marie; Osborne.
 Haddox, Charles; Lawrence.
 Hadley, Ernest Elvin; Alton.
 Hadley, James Wilbur; Coldwater.
 Hangen, Eva Catherine; Wellington.
 Hardacre, James Emerson; *Kansas City, Mo.*
 Harper, Mabel Jane; Frankfort.
 Harris, Joseph Pratt; Windom.
 Harris, Polly Smith; Lawrence.
 Hart, Pattie; Grenola.
 Harter, Gladys; Douglass.
 Hawes, Ralph Edward; Wakefield.
 Hawkins, Ulista Alice; *Jasper, Mo.*
 Helmer, Sophia Bertha; Fort Scott.
 Hendrickson, Ethel E.; Lawrence.
 Hendrickson, Floyd Chester; Lawrence.
 Henson, Gurrie Ray; Englewood.
 Hertzler, Agnes Hancock; Halstead.
 Hetler, Donald McKinley; Osage City.
 Hodder, Margaret; Lawrence.
 Hoffman, William Edwin; Lawrence.
 Holden, Harley Edwin; Neodesha.
 Hostetler, Ruby Madelyn; Glasco.
 Hughes, Osee Gladys Lee; Lawrence.
 Hurley, Gertrude Ellen; Leavenworth.
 Husson, Margaret Sabina; *Kansas City.*
 Hutton, Jack Gossett; Abilene.
 Irwin, Margaret L.; Ness City.
 Isenberger, Robert Murray; Natoma.
 Jobs, Frances Mildred; Mission Hills.
 Johnson, Anna Mary; Kingman.
 Johnson, Frederica Angela; Blue Rapids.
 Johnson, Howard Henry; Garnett.
 Jones, Ogden Sherman; Lawrence.
 Joseph, Frances Marion; Whitewater.
 Kehl, Charles Cyrus; Newton.
 Kinney, May; Lawrence.
 Kreeck, Charlotte Eloise; Lawrence.
 LaCoss, Gertrude Martha; Lawrence.
 Laslett, Herbert Reynolds; Lawrence.
 Lauer, Albert Benjamin; Osage City.

SENIORS—continued

Leibengood, Nelle; Paola.
 Levi, Laura May; Olathe.
 Lingenfelter, Bonnie Matilda; Fredonia.
 Mack, Inez; Lawrence.
 Mannix, Winnifred; Overbrook.
 Martin, Francis Ivan; Douglass.
 Martin, Lillian Mae; Topeka.
 Mason, Lorinda; Lawrence.
 Means, Lucile Ingels; Hiawatha.
 Messick, Jessie Lea, Hill City.
 Metcalf, Ralph Hedges; *Kansas City, Mo.*
 Miller, Stella Vanera; Lawrence.
 Moody, Minnie Elizabeth; Lawrence.
 Morgan, Harry Hill; Lawrence.
 Morgan, Howard Charles; Haviland.
 Moser, Paul; Meriden.
 Mott, James Mabbitt; Kansas City.
 Mowrer, Ernest Russel; Lost Springs.
 Musson, Edith; *Norborne, Mo.*
 Myers, Burton Allen; Lawrence.
 McDonald, Susan Peake; Coffeyville.
 McEwen, Fred John; Iola.
 McHenry, Lloyd Alfred; Baldwin City.
 McKinney, Helen Julia; Iola.
 McVey, Roy Vernon; Garnett.
 Nicholson, Mary Merse; Newton.
 Nielson, Harry Martin; Natoma.
 Nordstrom, Arnold Reynold; Marquette.
 Nowlin, Lucile C. H.; Lawrence.
 Officer, Forrest Irving; Hillsdale.
 Patrick, Ruth; Randall.
 Pedroja, Marv M.; Lawrence.
 Phenicie, Edith Anna; Tonganoxie.
 Plank, Elizabeth; Lawrence.
 Porterfield, Lois Myrtle; Holton.
 Potter, Clarence Earl; Girard.
 Querfeld, Dorothy Jessie; Lawrence.
 Rayburn, Myrtle Francis; El Dorado.
 Raymond, Walter Archie; Rago.
 Reding, Katherine Prue; Lawrence.
 Reid, Elsie; Norcatu.
 Reynolds, John McCormick; Independence.
 Rice, Gladys; Lawrence.
 Richter, Theodore Henry; Alma.
 Rickard, Marjorie Adeline; Lawrence.
 Roberts, Mary Frances; Lawrence.
 Robertson, Robert Lorin; Lawrence.
 Robinson, Gladys Josephine; Chanute.
 Robinson, Guy Chapman; Kansas City.
 Robinson, Helen Barger; Salina.
 Rockey, Mildred Jean; Lyons.
 Rogers, Annie Isabel; Lawrence.
 Rogers, Lena Edith; Wellington.
 Roop, Celia Esther; Abilene.
 Rose, Mildred Edith; Rosedale.
 Ruble, Mirl Calvin; Parsons.
 Rummel, Emma May; *Independence, Mo.*
 Rush, Ethel May; Lawrence.
 Russell, Cora Thurza; *Amarillo, Tex.*
 Schell, Mignon Bernice; Wichita.
 Schmidt, Paul Wagner; Junction City.
 Schultz, Madeline; Barnes.
 Schwarz, Josephine Marie; Wilson.
 Scott, Ethel; Columbus.
 Selig, Mary Frances; Lawrence.
 Senhausen, Julian Louise; Leavenworth.
 Shafer, Annie N.; Olathe.
 Shanton, Lynn Clyde; Kensington.
 Sheets, Linnie Vacta; Lawrence.
 Shelley, Harold John; Elmdale.
 Shukers, Lucile; Independence.
 Skinner, Frances Marie; Columbus.
 Slaven, Eulalia Hazel; Glen Elder.
 Smith, Mary Ellen; Pleasanton.
 Soper, Gail Raney; Hutchinson.
 Sopher, Maude Myrtle; Topeka.
 Sperry, Charles Carlisle; Beverly.
 Spreier, Amy; Pawnee Rock.
 Sproull, Cargill William; Lawrence.
 Stevenson, Harriet Maude; Lawrence.
 Stevenson, Margaretta Price; Leavenworth.
 Stewart, Georgie Leah; *Desota, Mo.*
 Stivison, Roy Edward; Lyndon.
 Sturgeon, Vivian Virginia; Lawrence.
 Sullivan, Bradley; Langdon.
 Tarrant, Thomas Oliver; Florence.
 Taylor, Mrs. Bernita Elgin; Lincoln.
 Teitzel, Hazel Louise; Wichita.
 Thiele, George Henry; Washington.
 Thomas, Charles Leonard; Humboldt.
 Thomas, Ruth Laura; Lawrence.
 Thompson, Ina Theo; Marion.
 Thompson, Wiley Lane; Lawrence.
 Thompson, Willard Curtis; Marion.
 Todd, John Edward; Lawrence.
 Totten, Orpha M.; Beattie.
 Trant, Sara; Edwardsville.
 Tucker, Dorothy; Lawrence.
 Turner, Hoyt Charles; Newton.
 VanArsdale, Mary Evangeline; Lawrence.
 Voorhees, Myra Bell; Leavenworth.
 Waters, Jane; Bonner Springs.
 Watson, Charles Hoyt; Lawrence.
 Wattles, Warren Fay; Wichita.
 Weaverling, Helen Charlotte; Lawrence.
 Webster, Paul Reichert; Larned.
 Wedd, Helen Frances; Lenexa.
 Wedell, Emma Caroline; Lawrence.
 Weltmer, Wardie Wallace; Smith Center.
 Wilhelmsen, Karl John; Kansas City.
 Wilson, Leland Alvin; Chanute.
 Wilson, William Henry; Lawrence.
 Windsor, Grace; Lawrence.
 Woodard, Parke Harold; Wichita.
 Young, Arthur Raymond; Wichita.
 Young, Donald P.; Dodge City.

SENIORS, 252.

JUNIORS.

Albach, Robert Henry; Lawrence.
 Allen, Clara Louise; La Cygne.
 Atkinson, Eleanor Frances; Lawrence.
 Babcock, Wealthy Consuelo; Hollenberg.
 Bailey, George Saint; Salina.
 Bailey, Lucile; Lawrence.
 Baldwin, Katrina; *Kansas City, Mo.*
 Bales, Elsie Ruth; Lawrence.
 Banks, Edith Olive; Independence.
 Barron, James Lloyd; Phillipsburg.
 Patchman, Eva Julane; St. John.
 Beal, Homer; Topeka.
 Beal, Mary Letitia; Hamilton.
 Bell, Kenneth G.; Corliss.
 Benson, Annie Victoria; *Essex, Conn.*
 Bircsak, Alfreda Florence; *Kan. City, Mo.*
 Black, W. Byron; *Kansas City, Mo.*
 Blair, James Stuart; Lawrence.
 Blair, Nadine; *Belton, Mo.*
 Blake, Harold Loure; Wichita.
 Blount, Justin Alexander; Larned.
 Booher, Florence May; Lawrence.
 Bovard, Mary Charlotte; Kansas City.
 Brady, Agnes Marie; Lawrence.
 Bromell, George Daniel; Kansas City.
 Brown, Clara Marie; Lawrence.
 Brown, Dorothy Ellen; *Kansas City, Mo.*
 Brown, Howard Dodge; Beloit.
 Brown, Karl; Lawrence.
 Buck, Jessie Lucile; Paola.

JUNIORS—continued.

- Bulkley, Charles Johnston; Salina.
 Bunger, Susie; Alta Vista.
 Burnett, Mary Margaret; Lawrence.
 Burnette, Lelah Lucille; Linwood.
 Burt, Roy Everett; Lawrence.
 Butler, Courtland Livingston; *Tulsa, Okla.*
 Butler, Florence Vale; Lawrence.
 Button, Dorothy Maude; Burrton.
 Campbell, Marjorie Anne; Harper.
 Canavan, Lila Marguerite; Lawrence.
 Carey, Walter Ray; Osage City.
 Carnie, Elizabeth Ewing; *Kansas City, Mo.*
 Carter, Millie Field; Lawrence.
 Castle, Marjorie; *St. Joseph, Mo.*
 Chaffee, Myrtie; Marysville.
 Chambers, Adelbert R.; Tescott.
 Chambers, Helen Louise; Lawrence.
 Cissna, Arnstina; Kansas City.
 Clark, Lewis C.; Lawrence.
 Clark, William Dorman; Utica.
 Conklin, Tracy R.; Abilene.
 Cooper, Dewey Hobson; Lawrence.
 Cox, Wilfred; Sharon Springs.
 Darby, Raymond V.; Washington.
 Day, Harry Edward; Canton.
 Day, Opal; Wichita.
 DeWald, Martha; Russell.
 DeWitt, Helen Wright; Kansas City.
 Dietrich, Carlton Clyde; Miltonvale.
 Dixon, Claude Frank; Kiowa.
 Dodderidge, Faye; White City.
 Drake, Gladys Edith; Lawrence.
 Drury, Ray V.; Newton.
 Dunmire, Camilla Ruth; Lawrence.
 Dyer, Eugene Thomas; Kansas City.
 Dyer, John Albert; Kansas City.
 Elliott, Jeannette Herriott; Lawrence.
 Emmons, Fern Ora; Lawrence.
 Engle, Viola; Abilene.
 Fairchild, Margaret; Hiawatha.
 Ferris, Emily Harriet; Lawrence.
 Firebaugh, Lena; St. John.
 Flint, Dorothy; Girard.
 Forbes, Helen Marguerite; Concordia.
 Foster, Lewis Chandler; *Kansas City, Mo.*
 Fulkerson, Katharine; Lawrence.
 Furney, Eunice; Alta Vista.
 Gestring, Hugh Arthur; Lawrence.
 Gibson, Winnie Olive; Arkansas City.
 Gidinghagen, Myrtle Rosalie; *Kan. City, Mo.*
 Gilkeson, Murray Mack; Burlingame.
 Gillispie, Imogene Marion; Kansas City.
 Gillock, Frances Eugenia; Fort Scott.
 Glasco, Maude Eleanor; Lawrence.
 Glasscock, Calvin Carleton; St. John.
 Goodjohn, Elizabeth Wright; Leavenworth.
 Gordon, Maybelle Inez; Lawrence.
 Green, Ethlyn; *St. Joseph, Mo.*
 Greenlees, Lois Ann; Lawrence.
 Gregory, Dwight Omar; Alton.
 Greig, Anne Elizabeth; *Van Buren, Ark.*
 Groh, Joseph Peter; Wathena.
 Guild, Ruth Evelyn; Topeka.
 Hamilton, Shirley Gonzalez; Lawrence.
 Hangen, Herman Cecil; Wellington.
 Harkrader, Florence; Pratt.
 Harlan, Vera May; WaKeeney.
 Harrington, Roscoe Samuel; Augusta.
 Hart, Helen; Bonner Springs.
 Hawes, Anna Virginia; *Oak Grove, Mo.*
 Hay, Abraham Jones; McLouth.
 Heathman, Lucy; Lawrence.
 Hege, Myrtle Marie; Sedgwick.
 Hemphill, Raymond Porter; Lawrence.
 Hereford, Melvin; Marion.
 Heter, Georgia; Lawrence.
 Higbee, Daniel Riggs; *Fowler, Colo.*
 Hildinger, Pauline Virginia; Lawrence.
 Hilton, Willard Ordway; Cottonwood Falls.
 Hitch, Mary; *Guymon, Okla.*
 Hitchcock, Frances Lee; Augusta.
 Hobart, Harold Nelson; Lawrence.
 Hoch, Frank Michael; Wilson.
 Hoff, Grace Elizabeth; Lawrence.
 Hohn, Nellie Doris; Marysville.
 Holloway, Richard Black; Lawrence.
 Holmes, Miriam Eva; Elmdale.
 Hoover, Raymond Kenneth; Haddam.
 Horton, Martha Ruggles; Lawrence.
 Hostetter, Marie Miller; Lawrence.
 Hovey, Jessie Lucile; Kansas City.
 Hudson, Marjorie; Fredonia.
 Huff, Bonnie Mae; Preston.
 Huffman, Nathan Harlan; Lawrence.
 Hunt, Homer Brett; Conway Springs.
 Hunter, Dresden Bryan; Norwich.
 Hurwitz, Samuel; Lawrence.
 Hussey, Glenn D.; Topeka.
 Hypes, Hazel E.; Topeka.
 Ingham, Florence Mae; Fort Scott.
 Jackson, Hester King; Lincoln.
 Jeter, Hugh; Alden.
 Johnson, Catherine Rawlings; *K. C., Mo.*
 Johnson, Thurston Leonor; McPherson.
 Katterjohn, Daniel Louis; Enterprise.
 Keeler, Guy Vernon; Scottsville.
 Kennedy, Julia Alice; Fort Scott.
 Kennedy, Leta Fern; Lawrence.
 Kerr, Raymond Merrill; Salina.
 Ketels, Marie; Lawrence.
 Kimball, Pauline; Neodesha.
 Kirchner, Arthur Earl; Baldwin.
 Korb, John Herman; Lawrence.
 Kreider, Karl McKinley; Lawrence.
 Krouse, Rollo; Wheaton.
 Kubik, Clara Mary; Caldwell.
 Kubik, Emily Clementis; Caldwell.
 Lamme, Elizabeth; Hiawatha.
 Landon, Charles Earl; Mayetta.
 Larson, Mary Elizabeth; Assaria.
 Laslett, Howard; Lawrence.
 Lawrence, Louis William; Lawrence.
 Leon, Irma Katherine; Lawrence.
 Lesh, Corinne; Arkansas City.
 Levi, Ada Viola; Olathe.
 Lindley, Georgia Elizabeth; Lawrence.
 Longstreth, Guy Vernon; Colony.
 Ludeman, Frances Margaret; Anthony.
 Lutz, Elizabeth Jane; Holton.
 Lutz, Irma Thecla; Kansas City.
 Lyne, James Garnett; Herington.
 Lyon, Garrett Brown; Augusta.
 MacNaughton, Mabel Gertrude; Tonganoxie.
 Maloy, Eva Helene; Eureka.
 Martin, Carol Lucile; Lawrence.
 Martin, Rebecca; Garnett.
 Martin, Wilfred Everette; Lawrence.
 Mason, Edward Sagendorph; Lawrence.
 Mellenbruch, Dale Franklin; Powhattan.
 Mitchell, Margaret Helen; Lawrence.
 Montague, Josephine May; Washington.
 Montgomery, George A.; Mankato.
 Montgomery, John Alexander; Lawrence.
 Moore, Esther H.; Hutchinson.
 Morgan, Louis Schubert; Arkansas City.
 Myers, Ralph Maness; Alden.
 McBratney, Edyth Mae; Centralia.
 McCall, Fanny Virginia; Hiawatha.
 McCamish, Dorothy Lee; Kansas City.
 McCandless, Orville Calnon; Lawrence.
 McChesney, Meda; Clay Center.
 McDowell, Carroll; Arkansas City.
 McGrath, Mary Bridge; Waverly.
 McIntire, Emery James; Lawrence.
 McMillan, Sadie; Lawrence.
 McNalley, Joseph Edward; Michigan Valley.
 Neighbors, Glenn M.; McPherson.
 Newman, Carl Sullivan; Dighton.

JUNIORS—continued.

Nixon, Louise Aldrich; Wichita.
 Oldfield, Verne Cline; LaCygne.
 Owens, Guy Ebenezer; Topeka.
 Palmer, Beatrice Ventura; Hutchinson.
 Palmer, Everett T.; Jewell City.
 Palmer, Gertrude Octavia; Lawrence.
 Parkinson, Mariva Jeanette; *Pt. Smith, Ark.*
 Patterson, Elsie Fay; Abilene.
 Pearson, Warren Prescott; White City.
 Peek, Milton Leroy; Arkansas City.
 Pepper, Helen Hayes; Eureka.
 Peironnet, Herbert Sanford; *Kan. City, Mo.*
 Pinkston, Paul Edwin; Independence.
 Piper, Caroline Hough; Irving.
 Potucek, Louis Eugene; Portland.
 Pratt, Joe J.; Lawrence.
 Preble, Fred Clarence; Hutchinson.
 Rankin, Jessie Gladys; Idana.
 Rannie, Paul Ruml; Lawrence.
 Reazin, Raymond Andrew; Macksville.
 Reddy, Kathryn; Harper.
 Reynolds, Olive; Holton.
 Richardson, Hermina M.; Lawrence.
 Richardson, Homer Henry; Iola.
 Robinson, Eva; Minneapolis.
 Robinson, Harry L.; Lawrence.
 Roby, Marjory; Topeka.
 Rorabaugh, Evelyn; Wichita.
 Ross, Carl; Kansas City.
 Rouse, Ruth Mary; Wichita.
 Rudolph, Ruth Georgia; Lawrence.
 Russell, Roy Dean; Great Bend.
 Sandberg, Dorothy May; *Kansas City, Mo.*
 Schnitzler, Fritz William; Wichita.
 Scott, James Armstrong; Kansas City.
 Scott, James M.; Mankato.
 Segelbaum, Rose Bertha; Kansas City.
 Shafer, Vesta; Lawrence.
 Shepherd, Gertrude; Kansas City.
 Sigrist, Frank August; Topeka.
 Skinner, Hazel; Garden City.
 Smith, Dwight Melvin; Wichita.
 Smith, Erma Anita; Sharon.
 Smith, Mary; Abilene.
 Smith, Nellie Virginia; Lawrence.
 Smith, Ralph Alexander; Garnett.
 Smith, Vernon David; Lawrence.

Smithmeyer, Matilda Emma; Lawrence.
 Solt, Orva Eather; Waterville.
 Spencer, Lucene Allen; Iola.
 Steckel, Marie; Ellinwood.
 Stephenson, Carol Dell; Burlington.
 Stephenson, Julian Rawlings; Lawrence.
 Stephenson, Walter; Luray.
 Sterling, John Andrew; Lawrence.
 Sterling, Lucile; Lawrence.
 Stevenson, Fern; Lawrence.
 Stewart, Margaret Anne; Lawrence.
 Stimmel, Robert Marion; Fowler.
 Strange, Vivian Naomi; Perry.
 Taylor, Mildred Aileen; Alton.
 Terrill, Harold James; Robinson.
 Thiessen, Edward Herman; Beloit.
 Thomann, Frank Charles; Summerfield.
 Tihen, Irene Beatrice; Andale.
 Topham, Laura; Lawrence.
 Transue, Elsie Belle; Summerfield.
 Tremaine, Minnie D'Estel; Iuka.
 Triplett, Roger; Emporia.
 Underwood, Fay; Lawrence.
 VanVelzer, Harry Leland; Fort Scott.
 VanVliet, Julius Patterson; Manhattan.
 Wagstaff, Helen Elizabeth; Lawrence.
 Walker, Margaret Louise; Salina.
 Walling, Lula Grace; Lawrence.
 Walz, Thomas Julius; Kansas City.
 Warden, Marine Ruffner; Lyons.
 Washington, Herschel Lawrence; Leoti.
 Wear, Millard Price; Topeka.
 Webb, Ora Louella; Lawrence.
 Weide, Enoch; Yates Center.
 Whitecher, Edith Frances; Concordia.
 Whitehurst, Terrell; Kansas City.
 Wilbur, Clifford Henry; Lawrence.
 Wilson, Allen Ditmars; Chanute.
 Wilson, Ivan Fernando; Lawrence.
 Winston, John Clarence; Lawrence.
 Winthrop, Psyche Susan; Wichita.
 Wood, Roberta Virginia; Lawrence.
 Wooddell, Helen Boyd; Nickerson.
 Woods, Ruth Sarah; Burden.
 Young, Margaret; Fredonia.
 Ziegler, Frederick McClain; Lawrence.

JUNIORS, 281.

SOPHOMORES.

Akright, James Gladstone; Lawrence.
 Alexander, Jennie Angeline; Garnett.
 Alexander, Maye Marie; Lawrence.
 Allen, Earline; LaCygne.
 Ames, Clarinda Josephine; Concordia.
 Anderson, Mary Marguerite; Gas.
 Anderson, Sister Mildred; *Pueblo, Colo.*
 Anderson, Tyson Virgil; Partridge.
 Anthony, Laura Gladys; Wellsville.
 Arnold, Cora Alice; Agricola.
 Atchison, Edna Florence; Lawrence.
 Atwood, Esther; Caney.
 Auswald, Elizabeth Frances; Kansas City.
 Babcock, Marie Pauline; Wichita.
 Bagby, Grace; Lawrence.
 Bagley, Harriet Robson; *Melbourne, Iowa.*
 Baker, Fressa Sample; Toronto.
 Banker, Glenn Victor; Russell.
 Banker, Martha Tracy; *Tahlequah, Okla.*
 Banks, Mary Esley; Gas.
 Baskett, Roy F.; Holton.
 Baty, Marcia Stanhope; Lawrence.
 Bechtel, Isabel Frances; Liberty.
 Beery, Byron Ashby; Lawrence.
 Bell, Rachel Elizabeth; White Cloud.
 Bender, Helen Frances; *Okla. City, Okla.*
 Bennett, Arthur Harry; Topeka.

Bentley, Leslie Robert; Ozawkie.
 Bernhard, Alice Virginia; Lawrence.
 Bernstein, Julius; Lawrence.
 Besse, Harold V.; Pittsburg.
 Blean, William Frederick; *Bloomington.*
 Boese, Adolph; Hillsboro.
 Bocher, Inez Violet; Lawrence.
 Boone, George Franklin; *Manhattan.*
 Bottomly, Ruth Esther; Cedar.
 Bozell, Goldie Vivian; Cherryvale.
 Braly, Homer Benjamin; *Nardin, Okla.*
 Broeker, Louise Marie; Lawrence.
 Brown, Dudley Buck; Halstead.
 Brown, Helen Margaret; *Joplin, Mo.*
 Brown, Irwin Schilling; Minneapolis.
 Brown, Margaret Elizabeth; Lawrence.
 Brown, Marguerite Esther; Lawrence.
 Brownlee, Muriel Alberta; Salina.
 Brummitt, Wyatt Brearley; *Evanston, Ill.*
 Brush, Harriett Elizabeth; Lawrence.
 Burch, Edna Louise; *Carthage, Mo.*
 Burnett, Irma Aldine; Linwood.
 Butcher, Fred D.; Lawrence.
 Butcher, Seldon D.; Lawrence.
 Caffrey, Helen June; *Mt. Hope.*
 Campbell, Lida; *Meade.*
 Campbell, Robert Finley; *Meade.*

SOPHOMORES—continued.

- Carder, Leone; Lawrence.
 Carnie, Charlotte Sophia; *Kansas City, Mo.*
 Carter, Jean Cranston; Lawrence.
 Casford, Ralph Shelton; Bird City.
 Cassity, Roy Hampton; Ashland.
 Chapman, Lorette; *Kansas City.*
 Chappell, Glen Harold; *Newkirk, Okla.*
 Church, Basil; Lawrence.
 Cissell, Merrill Aikman; Chanute.
 Clark, Ernest Harry; *Kansas City, Mo.*
 Clark, Kenneth Hadden; Lawrence.
 Clark, Lois Hasseltine; *Kansas City, Mo.*
 Clark, Maurine Flowerree; *Fredonia.*
 Clevenger, Louis Edgar; *Concordia.*
 Coffey, Ewal; Lawrence.
 Coffin, Jean Eleanor; Lawrence.
 Cook, Geneva Ellen; Lawrence.
 Cooper, Mrs. Birdie White; Lawrence.
 Copeland, LeRoy N.; Lawrence.
 Cottrell, Lillian Fern; Irving.
 Craig, Jessie Emma; *Nortonville.*
 Crawford, Thomas L.; *Topeka.*
 Crim, Adele Montgomery; Lawrence.
 Crim, Virginia Dickinson; Lawrence.
 Cromwell, Harry Hardin; Lawrence.
 Cutter, Irene Elizabeth; Lawrence.
 Dade, Emil Bryan; Nickerson.
 Daniels, Joe Edward; Paola.
 Davis, Kathryn Laura; Lawrence.
 Dawson, Dorothy; Great Bend.
 DeWalt, Lorin William; *Argonia.*
 DeForest, Carol Holmes; *Wetmore.*
 DeHart, Nellie Adaline; *Galena.*
 Dewitt, Ronald Whittaker; *Wellington.*
 Dick, Adelaide B.; Lawrence.
 Dimond, Eva Moore; *Wichita.*
 Dodderidge, Philip William; *White City.*
 Dunn, Gretchen; *Bartlesville, Okla.*
 Durbin, Earle LeRoy; *Lyndon.*
 Earlenbaugh, Lawrence; *Clafin.*
 Eastman, Cora Grace; Lawrence.
 Edgar, Lucille Anna; Lawrence.
 Elliott, Dempsey Walter; Lawrence.
 Etling, John August; *Belpre.*
 Evans, Nellie Reese; Lawrence.
 Ewing, Ruth Evelyn; *Kansas City.*
 Faragher, Dorothy Delphine; *Sabetha.*
 Fearing, Olin Kyrle; Lawrence.
 Finch, Mateel; Lawrence.
 Fixley, Everett Hayes; *Parsons.*
 Fleenor, Harry Miles; *Lecompton.*
 Fleming, Bruce Aldrich; *Nickerson.*
 Fletcher, Louis R.; *Scott City.*
 Floyd, Dean Lewis; *Sedan.*
 Fogarty, Angela Julia; Lawrence.
 Foley, Helen Jane; *Topeka.*
 Foster, Jessie Ruth; *Achilles.*
 Powden, Irene Kemble; *Dewey, Okla.*
 Frazier, Irma Gilberta; *Kansas City.*
 Friesen, Herman Elmer; *Hillsboro.*
 Fugate, Annette Keller; Lawrence.
 Fuhr, Francis E.; *Meade.*
 Garrett, Annette Marie; Lawrence.
 Garvin, Mabel Marie; *Modoc.*
 Gault, Watson Rose; *Richmond.*
 Gempel, Paul August; *Leavenworth.*
 Gerhold, Ella Mae; *Greeley.*
 Gibson, Majory Josephine; *Wa Keeney.*
 Gibson, Ruth Muriel; *Arrington.*
 Gilmore, Mildred Lucile; Lawrence.
 Gleissner, Lillian Georgia; *Topeka.*
 Glenn, Dayton Furse; *Robinson.*
 Gorrill, Galen Alexis; Lawrence.
 Goss, Clark Cleo; *Harper.*
 Gould, Edythe Esther; *Irving.*
 Graeber, Arling; Lawrence.
 Greef, Albert Otto; *Pittsburg.*
 Gregg, Minnie Mae; *McCune.*
 Gregory, Harold VanVoorhis; Lawrence.
 Griffith, Gladys Katherine; *Wichita.*
 Gunn, Everett; *Nickerson.*
 Gunn, Nellie Edna; *Great Bend.*
 Gwin, Lorena May; Lawrence.
 Hackman, Lucy McFarland; Lawrence.
 Hackman, Mary McFarland; Lawrence.
 Hagen, Beatrice Liberty; *Ellinwood.*
 Hagen, Ella Jane; *Ellinwood.*
 Hagen, Maude Barbara; *Ellinwood.*
 Haines, Jean Rathburn; *Galena.*
 Hall, Harold Read; *Pratt.*
 Hambric, Moscelyn; *Wichita.*
 Hammat, Rilla Virginia; *Wichita.*
 Hangen, Luther Hale; *Wellington.*
 Hanna, Marcus A.; Lawrence.
 Harms, Herbert August; *Wichita.*
 Harms, Marvin William; *Wichita.*
 Harris, Winifred Anne; *Horton.*
 Harrison, William Henry; *Downs.*
 Hart, Helen; *Ashland.*
 Hassig, Cecil Edwards; *Kansas City.*
 Hawkins, Mary Beatrice; *Jasper, Mo.*
 Haworth, Margaret Josephine; Lawrence.
 Hayes, Philip Cadet; *Iola.*
 Heim, George Frederick; *Ellinwood.*
 Helmer, Selma Velma; *Fort Scott.*
 Helwig, Ferdinand Christian; *Kansas City.*
 Herr, Opal Angeline; *Medicine Lodge.*
 Hershey, Noah L.; *Abilene.*
 Hibbard, Helen Louise; *Cherryvale.*
 Hill, Aeo; *Neodesha.*
 Hindman, Albert Henry; Lawrence.
 Hitchens, Edna Pauline; *Burlington.*
 Hobbs, Russell Eugene; *Wichita.*
 Hockenhull, Floyd Langley; Lawrence.
 Hodges, Lorene McCarthy; *Paola.*
 Hollis, Edgar Leon; *Fredonia.*
 Hoover, John Rodric Chase; *Haddam.*
 Hoover, William Harold; *Manhattan.*
 Hopkins, Vivian Erdene; *Kansas City.*
 Hostetter, Lucky Wingert; *Wellsville.*
 Hovis, Paul Leslie; *Coffeyville.*
 Howden, Rollo Ralph; *Skidmore, Mo.*
 Hunter, Geneva Campbell; Lawrence.
 Jacks, Eva; *Wichita.*
 Jackson, Helen Elizabeth; *Kansas City.*
 Jenkins, Fred Bliss; *Kansas City, Mo.*
 Jewett, Emma Frances; *DeSoto.*
 Jewett, Isabel Irene; *Waverly.*
 Johnson, Lois Frances; Lawrence.
 Jones, Paul Robert; *Council Grove.*
 Joslin, Donald Edward; *Hugoton.*
 Joslin, Leeman Charles; *Bavaria.*
 Kauffman, Rodger Ray; *Medicine Lodge.*
 Keeler, Lora Annie; Lawrence.
 Keeler, Walter James; Lawrence.
 Keith, Esther Mary; Lawrence.
 Kelsey, Ruth; *Jewell.*
 Kennedy, Frances Winifred; Lawrence.
 Kidwell, Zolan Lavonne; Lawrence.
 Kiefer, Everett Duane; Lawrence.
 Kilgore, Selden Hinkley; *Wichita.*
 Kimmel, Dean; *Robinson.*
 Kimmel, Walter L.; *Cherokee.*
 Kinney, Agatha Pearl; Lawrence.
 Kirkpatrick, Romona Elizabeth; Lawrence.
 Kirkpatrick, William Ashby; *Oswego.*
 Klapmeyer, Florence; *Kansas City, Mo.*
 Klima, Leo Theodore; *Medford, Okla.*
 Knight, Durell Keeling; *Kansas City.*
 Knott, Florence; *Spokane, Wash.*
 Kohler, Helen; *LaHarpe.*
 Kohman, Frances Miriam; *Dillon.*
 Kreitzer, Rose May; *Humboldt.*
 Kugler, Ernest William; *Abilene.*
 Kunkle, Geneva Mildred; Lawrence.
 Lacy, Blanche Mary; Lawrence.
 Landon, Ira; *Mayetta.*

SOPHOMORES—continued.

- Law, Seaton Marcellus; Lawrence.
 Lee, Frank Nelson; Kansas City.
 Lenski, Frank; Pittsburg.
 Liggett, Winfield Freeman; Kansas City.
 Lockwood, Ava Patricia; St. Francis.
 Lodge, Julia Margaret; Kansas City.
 Lonborg, Arthur C.; Horton.
 Look, Minnie F.; Stockton.
 Lynn, Floyd Henson; Neosho Falls.
 MacGregor, Gladys Margaret; Med. Lodge.
 Magers, Henry Brady; Winchester.
 Malott, Deane Waldo; Abilene.
 Mandeville, Frank P.; Kingman.
 Markley, Elmer A.; Atlanta.
 Maroney, Frank Edwin; Attica.
 Marshall, Vivian; Leon.
 Martin, Helen Marie; Kansas City.
 Mason, Helen Louise; *Kansas City, Mo.*
 Mathews, John Andrew; Lawrence.
 Matthews, Violet Eugenia; Topeka.
 May, Elmer Lawson; Hutchinson.
 Mee, Herbert Martin; *Oklahoma City, Okla.*
 Mehl, Henry Guy; Beloit.
 Melvin, Miriam Virginia; Lawrence.
 Messing, Alma; Ashland.
 Miles, Nell; Garden City.
 Miller, Howard Leslie; Chanute.
 Minger, Ethel Louise; Bern.
 Mitchell, Samuel Eben; Lawrence.
 Morrison, Charlotte Mauree; Lawrence.
 Mowrer, Loren Edgar; Lost Springs.
 Murphy, Helen; Jarbalo.
 Murphy, Paul Carter; Tonganoxie.
 Musson, Edwin Harrington; *Norborne, Mo.*
 McBratney, Nellie Evelyn; Centralia.
 McBride, Edna; Lawrence.
 McBride, Nita; Onaga.
 McConnell, William Howard; Lawrence.
 McFadden, Herbert C.; Chanute.
 McIntire, George Franklin; Wichita.
 McKinney, Earl Bradley; Iola.
 McLain, Ernest Karl; Wellsville.
 MaLaughlin, Myra; Paola.
 McNutt, Eloise; *Kansas City, Mo.*
 McPherson, Hobart Mervin; Lawrence.
 McShea, Gladys Eleanor; Lawrence.
 Naismith, Helen Caroline; Lawrence.
 Needham, Dollie; Lane.
 Nelson, Naomi Laura; Lawrence.
 Nettels, Charles Henry; Topeka.
 Neylon, George Albert; Paola.
 Nichols, Lois Eva; Pawnee Rock.
 Noah, Lucile Allen; Hutchinson.
 Oglevie, Rial Richardson; Burr Oak.
 Orelup, Katherine Elizabeth; Lawrence.
 Orr, Francis Currie; *Kansas City, Mo.*
 Owen, William Byron; Lawrence.
 Oyster, Frank Alexander; Paola.
 Parker, Knowlton; Robinson.
 Patterson, Blanche Lyndell; Lawrence.
 Paul, Neil Archie; Randall.
 Pearson, Edith Sarah; Lawrence.
 Pearson, Lydia Christin; Courtland.
 Penwell, George Harvey; Larned.
 Perkins, Alice Louise; Kansas City.
 Perkins, Alice Minerva; Howard.
 Perkins, Lois; Meade.
 Pittman, Clara Amanda; Liberal.
 Props, John Lee; Lawrence.
 Pulliam, Paul Emmett; Lyons.
 Pyle, Mary Llewellyn; Jewell.
 Raffety, Charles Edward; Sylvan Grove.
 Rankin, Zella Margaret; *Albuquerque, N. M.*
 Ransom, Turner Payne; Lawrence.
 Reed, Francis Santry; Newton.
 Reed, Ula May; Attica.
 Reinisch, Marguerite; Lawrence.
 Renner, Marion John; Lawrence.
 Rhine, Mary Evelyn; Washington.
 Riggs, Clara Harriett; Emporia.
 Riggs, Hazel May; Lawrence.
 Riley, Ray Jeannette; Lawrence.
 Robb, Helen Irene; Chapman.
 Rodkey, Ralph Darwin; Blue Rapids.
 Roles, Edith Marion; Kansas City.
 Rosenbloom, Zolon Henry; Wichita.
 Rourke, George W.; Topeka.
 Roush, Hoyt Leon; Jewell.
 Rutherford, Paul Judson; Wellington.
 Ryan, Clarence Jay; Halstead.
 Ryan, Mildred Temple; Liberal.
 Sallee, Flora Myrtle; Hutchinson.
 Samson, Mary Henrietta; Topeka.
 Sanderson, Leafy Mary; *Monte Vista, Colo.*
 Sawyer, Maren Berdine; *Kansas City, Mo.*
 Schaible, Ethel Ferne; Fairview.
 Schmitt, Helen Crandell; Jewell.
 Schoepfel, Andrew Frank; Ransom.
 Schwartzkopf, Edward A.; Bison.
 Schwarz, Joseph J.; Lawrence.
 Schwinn, Mildred Aldred; Wellington.
 Scofield, Margaret; Beloit.
 Searle, Genevieve; Oskaloosa.
 Sentney, Charles Ralph; Hutchinson.
 Severson, Lewis Everett; Lawrence.
 Shofstall, Charles; Kansas City.
 Shores, Belva Agnes; Burr Oak.
 Shores, Harold Porter; Burr Oak.
 Slawson, Charles Julius; Girard.
 Slawson, John; Minneapolis.
 Smith, Bert C.; Pawnee Rock.
 Smith, Elbert Francis; Ellinwood.
 Smith, Jesse Herbert; Chanute.
 Smith, Leslie Franklin; Vermillion.
 Smith, Mary Lucile; Kansas City.
 Smith, Theodore Soper; Kansas City.
 Spake, Julia Mary; Kansas City.
 Spence, Percival William; Valley Falls.
 Sponsler, Gertrude; Hutchinson.
 Standly, Harold Griffin; *Laclede, Mo.*
 Stanley, Arnold Archibald; Lawrence.
 Sterling, Pauline; Lawrence.
 Stevens, Harry Leonard; Hutchinson.
 Stevens, Roy Ulysses; Lawrence.
 Stevenson, Wayne Bernice; Lawrence.
 Stewart, Harry Martin; Turon.
 Stillwell, Robert Jerry; Kansas City.
 Stockwell, Una Elizabeth; Lawrence.
 Stodder, Frederick Gere; Burden.
 Stodder, Richard Henry; Burden.
 Stratton, Helen Irene; Lawrence.
 Strickland, Frances Wright; Hunnewell.
 Summerville, Ward White; *Joplin, Mo.*
 Swanson, Minnie C.; McPherson.
 Sweet, Cyra B.; *Kansas City, Mo.*
 Taylor, George Emmett; Burlingame.
 Taylor, Lora; Alton.
 Tester, Allen Crawford; Coffeyville.
 Thomen, Agnes; Junction City.
 Thompson, Hallie Armida; Lawrence.
 Trant, Ruth Mary; Edwardsville.
 Tucker, Jack; Lawrence.
 Tunney, Hubert James; Cleveland.
 Uncapher, Bartelle; Moline.
 Vail, Helen Robison; *St. Joseph, Mo.*
 Vanderschmidt, William W.; Leavenworth.
 VanSandt, Marguerite Eileen; Chanute.
 Varner, Luella; Iola.
 Veeder, Kirke Coldwell; Cherryvale.
 Veigel, Helen Ione; Wichita.
 Venard, Lloyd George; *Kirkwood, Mo.*
 Vermillion, Una; Tescott.
 Voelkner, Viola Matilda; Lawrence.
 Walker, William Brydon; Olathe.
 Walters, Velma Mary; Wakefield.
 Ward, Winifred Emily; Lawrence.
 Watson, Bertha; Minneapolis.
 Watt, Evelina Frances; Ellsworth.

SOPHOMORES—*continued*.

Welsh, George Farnum; Lyons.
Weltmer, Mrs. Eunice; Smith Center.
Wetty, Donald Regnier; *Bartlesville, Okla.*
Wentworth, Frank Reginald; Russell.
West, Genevieve; Lawrence.
West, Winifred Melvina; Kinsley.
Westfall, Juanita; Kansas City.
White, Alberta George; Lawrence.
White, Edith Kathryn; Lawrence.
White, Marceo Antonio; Arkansas City.
Wilkerson, Catherine D.; Lawrence.
Willems, Leonard Carmody; Lansing.
Willhelmy, Ellis Warner; Kansas City.
Williams, Anton I.; Lawrence.
Williams, Frederic Calvin; Lawrence.
Wilson, Webb; Horton.
Windhorst, Emma Henry; Belpre.

Wing, Monta Eldo; Columbus.
Winsor, Carl Isaac; Atchison.
Wohlgemuth, Robert Jacob; Washington.
Wolley, Ruth; Liberal.
Wood, Mary Armit; Minneapolis.
Woody, Warren Vernon; Barnard.
Wulf, Martha Anna; Humboldt.
Wulfekuhler, Irving William; Leavenworth.
Wyatt, Jessie Lee; Lawrence.
Yap, Benjamin T.; *Honolulu, Hawaii.*
Yates, Margaret Josephine; Merriam.
Yeater, Georgia Rains; Lawrence.
Young, Dayton Lawrence; Wichita.
Young, Nellie Mary; Seneca.
Young, Percy; Lawrence.
Youngmeyer, Earl William; Lawrence.

SOPHOMORES, 402

FRESHMEN.

Aach, Arthur William; Galena.
Adair, Ruth May; Lawrence.
Adams, Alice Mary; Meade.
Adams, Kenneth Stanley; Kansas City.
Adams, Marguerite; Lebanon.
Adams, Randolph B.; Topeka.
Ainsworth, David; Lyons.
Akers, Merton T.; Lawrence.
Alexander, Clemens; *Kansas City, Mo.*
Alexander, Harvey Franklin; Lawrence.
Alford, David Robert; Leavenworth.
Allen, Charles Roger; Burlington.
Alsop, Mildred Agnes; Wakefield.
Amann, Horace Willard; Hiawatha.
Anderson, Mabelle Matilda; Savonburg.
Anthony, Daniel Read; Leavenworth.
Applegate, Aymee Agnes; Lawrence.
Arends, Florence; Kansas City.
Ashley, Byron John; Pleasanton.
Austin, Herman Launcelot; Kansas City.
Ayers, Glen Zella; Alma.
Babsky, Ovilla TenBroeck; Lawrence.
Bailey, George Luther; Topeka.
Baldwin, Wilber Clifton; McPherson.
Ball, Cocha Mae; Mapleton.
Banta, Philip Raymond; Harper.
Barnard, Chester Avery; Madison.
Barnett, Helen Regina; Rosedale.
Barry, Calvin Edward; Meriden.
Baum, Ernest Eldon; Kansas City.
Baum, Theresa Rose; Galena.
Bear, Frances Arrintage; *Roswell, N. M.*
Beeler, Nellie Eleonora; Mankato.
Bell, Francys Eola; Leavenworth.
Bennett, Horace Reed; Effingham.
Bennett, Roy Sutton; Lawrence.
Bereman, Bessie Isabel; Nickerson.
Berney, Catherine Anna; Horton.
Berry, Merlin Smith; Jewell.
Beyer, Lilah; Arrington.
Bidwell, George Henry; Kinsley.
Billingsley, John A.; Kansas City.
Binford, John Allen; Wellsville.
Binney, Robert Franklin; *Strawn, Tex.*
Bishop, Melvin Paul; Lawrence.
Black, Emil Eugene; Lawrence.
Blackburn, Glessie D.; Stafford.
Blair, Donald C.; Beloit.
Blake, George Russell; Winfield.
Bleakley, Georgina E.; Lawrence.
Bleakley, Walter Thompson; Lawrence.
Bolton, Harry Benjamin; Alta Vista.
Bowles, Fred Virgil; Walnut.
Boyd, Frank Eden; White City.
Boyd, Russell Verne; Liberal.
Boyles, Ruth Irene; Lawrence.
Bradley, Everett L.; *Cherokee, Okla.*

Bradley, Orval; *Cherokee, Okla.*
Bradshaw, John Percy; Lebanon.
Bressler, Earl Wesley; Nickerson.
Brewster, Mary Jane; Pratt.
Brite, Harold S.; *Wagoner, Okla.*
Brown, George Harold; Holton.
Brown, Jack Prescott; *Kansas City, Mo.*
Brown, Madge Ben; Great Bend.
Brown, Marie Alberta; Lawrence.
Broyles, Elizabeth Louise; *Bethany, Mo.*
Brueck, William Thomas; Paola.
Buckle, Clair Arthur; Stafford.
Buikstra, Lloyd Poffen; Cawker City.
Bundy, Jess Bryon; Auburn.
Burden, Cecil Warren; Hutchinson.
Burke, Lois Louise; Lawrence.
Burrows, Winston Richards; Halstead.
Burwell, Keene C.; *Oklahoma City, Okla.*
Calene, Raymond Millard; Sylvan Grove.
Campbell, Mary Elizabeth; Atchison.
Carlgren, Florence; Concordia.
Carlin, Helen Margaret; Salina.
Carroll, Matthew Eldridge; Kansas City.
Case, Goldie Ruth; Arkansas City.
Case, Naomi Marie; Arkansas City.
Casper, Henry; Topeka.
Chain, Edna; Wichita.
Charles, Olive Ruth; Lyons.
Cherry, Henry Lee; Lebanon.
Chestnut, Early Mast; Kincaid.
Chipman, Floyd Alexander; Stockton.
Christmann, Albert Louis; Syracuse.
Clark, Edna Elithe; Topeka.
Clark, Elinor Bourland; *Kansas City, Mo.*
Clark, Evelyn Rosaline; Lawrence.
Clark, George Fletcher; Baldwin.
Cleveland, Lucile; Lawrence.
Clift, Merl Cecil; Lawrence.
Clingman, Talbot Foster; Lawrence.
Cobbs, Margaret Ruth; Horton.
Cochran, Burt Emerson; Wichita.
Coghill, Robert DeWolf; Lawrence.
Cole, Lucile Jeanette; Lawrence.
Coleman, Grace; Leavenworth.
Collins, Byron Eugene; Topeka.
Colter, Lloyd Clarence; Chetopa.
Conroy, William Patrick; Beloit.
Convis, Dallas Laverne; Burr Oak.
Coons, Carl; Lawrence.
Coons, Elsie May; Lawrence.
Cooper, John Frankland; Stockton.
Coventry, Blanche Marcella; Lawrence.
Craig, Walter Lucien; *Washington, D. C.*
Crandall, Lola Isabel; LeRoy.
Crane, Dorothy E.; Howard.
Cummings, Jack; Barnard.
Cunningham, Robert Brown; Caney.

FRESHMEN—continued.

- Darnall, Burton Gardnier; Kansas City.
 Davidson, Dewey Daniel; Lawrence.
 Davis, Chauncey Milton; Lawrence.
 Davis, Elmer Frank; *St. Joseph, Mo.*
 Davis, Kathleen; Lawrence.
 Davis, Ralph Allison; Holton.
 Davis, William Ray; Verdi.
 Davisson, Dewey McKinley; Lawrence.
 Day, Dorothy; Ellsworth.
 Dean, Wilson McClain; Richfield.
 Decker, Helen Margaret; Valley Falls.
 Deets, Mildred McClain; *Okl. City, Okla.*
 Delaney, Andrew Oliver; Leona.
 Derge, Dorothy; Lebanon.
 Desmond, William Myron; Greeley.
 Detar, Burleigh Eli; *Miami, Okla.*
 Devereux, Margaret Elfreda; Troy.
 Dewell, Arthur Glen; Stark.
 Diehl, Clifford Kriebel; Peck.
 Diveley, Rhea Mae; Hutchinson.
 Diver, Anne Margaret; Humboldt.
 Dowell, Frank Simeon; Lawrence.
 Driskel, Kelsie Elsworth; Lawrence.
 Droll, Donald Wilbert; Alta Vista.
 Duff, Louis Dunlap; Horton.
 Duvall, Hunter William; Hutchinson.
 Eastman, Relia Carl; Greensburg.
 Eaton, Ethel Lena; *Waukomis, Okla.*
 Eaton, Mark M.; Erie.
 Eberly, Edna; Russell.
 Eddy, Murray Chadwick; Colby.
 Edgerton, Charles Milo; Randolph.
 Edwards, William Donald; Hutchinson.
 Ellis, Dorothy Jane; Pratt.
 Emberton, Odie Daniel; Rosedale.
 Engel, Dorothea Louise; Lawrence.
 Enright, Myra Alice; Kansas City.
 Epley, Ida Gladys; Lawrence.
 Estes, Arlie Wilber; Stafford.
 Etheridge, Hinda; Galena.
 Evans, Amanda Elizabeth; Lawrence.
 Faringer, Harmon Wilson; Lawrence.
 Fearing, Bascom Coolidge; Burr Oak.
 Fergus, Ewing Bradford; Topeka.
 Ferris, Caryl Ray; McPherson.
 Ferris, Florence Evelyn; Lawrence.
 Fitzgerald, Julia Marcella; Jamestown.
 Fitzsimons, Catherine Teresa; *K. C., Mo.*
 Fleck, Arthur L.; Kansas City.
 Fleer, Emma Ida; Baldwin.
 Flynn, Frances Helene; Humboldt.
 Forman, George William; Alton.
 Fowler, Colleen; LaHarpe.
 Fox, Clarence Maynard; Greeley.
 Fox, Lenore Sarah; Greeley.
 Fox, Richard Edward; Washington.
 Fratcher, Charles Henry; *Kansas City, Mo.*
 Frederick, Byron Clifford; Bonner Springs.
 Frisbie, Edith Adelaide; Bonner Springs.
 Fry, Donald Elmer; Belleville.
 Fugate, Josephine; Lawrence.
 Fuhrman, Arthur Alexander; Lawrence.
 Fulton, Ham R.; Sabetha.
 Gardner, Clarice Mae; Fontana.
 Garvin, Arthur Eugene; Erie.
 Gaskill, Grace Helen; Lawrence.
 Gerstenberger, Herbert Alfred; Eudora.
 Gibbons, Clara Marie; Lawrence.
 Gilkeson, Raymond Howard; Burlingame.
 Gimple, Goldie Miranda; Mankato.
 Glendinning, Katherine Shiland; Lawrence.
 Goff, Nancy Moody; Lawrence.
 Gottlieb, Ferdinand; Pleasanton.
 Gould, Lora Emmaline; Wilroads.
 Govier, Helen Elizabeth; *Kansas City, Mo.*
 Graham, Eugene Broderick; Holton.
 Graves, Alfred James; Dodge City.
 Gray, Carl Arthur; Kirwin.
 Gray, James William; El Dorado.
 Green, William Arthur; *St. Joseph, Mo.*
 Greene, Grace M.; Lawrence.
 Greenwood, Frances; Hill City.
 Grim, James Harold; Sylvan Grove.
 Grossenbacher, Margaret; Bern.
 Gwin, Willard Peter; Lawrence.
 Haack, John A.; Florence.
 Hackenberg, Robert Alexander; Downs.
 Hackley, Harry Dee; Burlington.
 Haelsig, Otto Herman; Eudora.
 Hagenbuch, Sarah Josephine; Troy.
 Hake, Wilma Nora; Minneapolis.
 Halpin, Walter Michael; Leavenworth.
 Harmon, Lowell Frank; Leavenworth.
 Harner, Collis R.; Howard.
 Harris, Virgil Vallorous; Burr Oak.
 Harrison, Alvie Brooks; Herington.
 Hartman, Isadore; *Brooklyn, N. Y.*
 Haughawont, Aleah Howard; Onaga.
 Hay, Laurence Charles; Paola.
 Heizer, Charles; Osage City.
 Helmers, William Henry; Leavenworth.
 Henderson, Emma Louise; *Durango, Colo.*
 Heren, Walter Graff; Lawrence.
 Hertzler, Helen Lenore; Halstead.
 Higbee, Daniel Riggs; Lawrence.
 Hill, Dannie Mae; Lawrence.
 Hilton, Joseph Howard; Cottonwood Falls.
 Hitchcock, William H.; Augusta.
 Hodges, McKenna; Paola.
 Holdefer, Gertrude Marion; Kansas City.
 Holloway, Katherine Stuart; Lawrence.
 Holloway, Marvel Thea; Lawrence.
 Holmberg, Corinne; Peabody.
 Holmes, Julius C.; Lawrence.
 Holmes, Lon Joe; Chetopa.
 Hopfer, Otto Emanuel; Sylvan Grove.
 Hornby, Ruth Alma; Lawrence.
 Hubbard, Lena Irene; Minneapolis.
 Huber, Lillian Myrtle; Wichita.
 Hudson, Edward F.; Fredonia.
 Hughes, Daisy Marie; Lawrence.
 Hughes, Emmett Lionel; *Kansas City, Mo.*
 Humphrey, Jewell Lucile; Caney.
 Husband, Myron Williams; McPherson.
 Hutchins, Leroy David; Cawker.
 Jacoby, Chester Leroy; Dodge City.
 Jamias, Irineo Edralin; *Sarat, P. I.*
 Jennings, Edith Maurine; Bronson.
 Jensen, Therkelsen P.; McPherson.
 Jeter, Gilbert Troy; *Oklahoma City, Okla.*
 Johnson, Albert Albert; LeLoup.
 Johnson, Genevieve; Lawrence.
 Johnson, Morrison Randolph; *Braymer, Mo.*
 Johnson, Vansel Stanley; Valley Falls.
 Johnson, Wilbur Ray; Greensburg.
 Johnston, Paul Alba; Lawrence.
 Jones, Chauncey Derrick; Wichita.
 Jones, George William; Council Grove.
 Jones, Judge Ivison; Lawrence.
 Kaufman, Hester Jaunita; Rosedale.
 Keckley, Hugh Hanley; Agra.
 Kennedy, Earle Floyd; Parsons.
 Kerohr, Raymond P.; Lawrence.
 Kidd, Etta Ruth; Lawrence.
 Kidwell, Marjorie Jessie; Lawrence.
 King, Frederic Louis; Hiawatha.
 Kiser, Laurenia Elynor; Lawrence.
 Klein, Beatrice L.; Lawrence.
 Klepinger, Myrl Marie; Rosedale.
 Knauss, Lyle McKinley; Garnett.
 Knoles, James Lyle; Kingman.
 Koehring, Dorothy May; Lawrence.
 Konantz, Joseph S.; Glade.
 Kreamer, Beatrice Cozette; Kansas City.
 Kuhn, Chester Arthur; Lawrence.
 Lakin, Albert Hall; Emporia.
 LaMar, Norvelle C.; Lawrence.
 Lamb, Lawrence Wooderson; Lawrence.

FRESHMEN—continued.

- Laming, Charles Caulton; Tonganoxie.
 Lane, Kathryn Lucille; Lawrence.
 Lanning, Stephen Alexander; *Artesia, N. M.*
 Lashley, Floyd Johnson; Girard.
 Law, Florence Mildred; Lawrence.
 Lawrence, Ben; Nickerson.
 Learned, Robert Emery; Lawrence.
 Lee, Lucile Marie; Lawrence.
 Leedy, Eugene Newport; Neosho Falls.
 Leggett, Carrie Leota; Wichita.
 Lehman, Sam; Newton.
 Lengemann, William Theodore; *K. O., Mo.*
 Lewis, Mamie Juanita; *Kansas City, Mo.*
 Liepman, A. Julien; Pittsburg.
 Linnerson, Ernest; Kansas City.
 Little, Harry Buhler; Alta Vista.
 Little, Herbert Bleviss; Lawrence.
 Loflin, Beulah Eddeline; Ellis.
 Long, Gladys; Kansas City.
 Long, John Francis; Madison.
 Lopez, Patricio Alfonso; *Las Cruces, N. M.*
 Lovejoy, Halsey Edwin; *Rocky Ford, Colo.*
 Lourance, Marc Herbert; Thayer.
 Lupton, Frances Louise; Nickerson.
 Lyle, Robert Earle; *Rich Hill, Mo.*
 Lynn, Robert H.; Garden City.
 Mack, Alberta; Lawrence.
 Mackie, Martha; Lawrence.
 MacLeod, George Dewey; Washington.
 MacMurray, Arthur Cooper; Lawrence.
 Madden, Leo Laurence; Effingham.
 Magill, Van Hooper; Lawrence.
 Magruder, Millard Franklin; *Ft. Smith, Ark.*
 Malmberg, Emma Augusta; Lone Star.
 Mann, Ned Ransome; Blue Mound.
 Marks, Virgil Leslie; Kimball.
 Marshall, Charles H.; Glasco.
 Marshall, Thomas Roy; Quenemo.
 Martin, Albert Bugle; Sylvia.
 Martin, Wayne Griswold; Salina.
 Mason, Fay Leonard; Chanute.
 Massey, Ruth Ethlyn; Wellington.
 Mather, Edward; Centralia.
 Maupin, Oakland Lee; *Carrollton, Mo.*
 Maxwell, Edward Charles; Leonardville.
 May, Grace Louise; Hutchinson.
 Mayer, Minnie; Ellsworth.
 Medill, George Tabor; Leavenworth.
 Meek, Clarence Lewis; Lawrence.
 Meek, Van Eton; Turon.
 Merritt, Florence Maude; Lawrence.
 Meuffels, Herman Dewey; Lawrence.
 Meyer, Everett R.; *Oregon, Mo.*
 Middlekauff, Jack Kenneth; Hays.
 Miller, Blanche Helen; Lawrence.
 Miller, Godfrey Theodore; Junction City.
 Miller, Mary Louisa; Iola.
 Miller, Maximilian Alexander; Onaga.
 Miller, Virgie Birdie; Lawrence.
 Millikin, Lorna; Peabody.
 Minnehan, George Francis; Summerfield.
 Mitchell, Mattie Lucile; Lawrence.
 Mitchell, Vernal Clyde; Ashland.
 Montgomery, Ed. G.; Junction City.
 Moore, Victor Rhodes; Parsons.
 Moren, Dorothy Celia; Lawrence.
 Morgan, Jane; *Kansas City, Mo.*
 Moulton, William Edward; Neodesha.
 Murphy, Julia, Jarbalo.
 McBurney, Walter John; *Thomas, Okla.*
 McClelland, Nancy; Lawrence.
 McCord, Lois Eva; Wichita.
 McCullough, Anna Marie; Paola.
 McCullough, Eleanor; *Independence, Mo.*
 McGaffin, Mary Ann; Meade.
 McGee, Raymond Robert; Centerville.
 McGinnis, Adah Aletha; El Dorado.
 McGinnis, Walter Fletcher; El Dorado.
 McGrath, Margaret; Waverly.
 McHale, Geraldine; Kansas City.
 McKenzie, Joseph Leonidas; Arkansas City.
 McKibbin, Harry Clinton; *Kan. City, Mo.*
 McKinney, Lester; Stilwell.
 McKinney, Marie Murr; Hoxie.
 McLinden, Lucy Catherine; Marion.
 McMeel, Nora G.; Meade.
 McNulty, Frances Blanch; Coffeyville.
 McVay, Hobart Thomas; Sterling.
 Neal, Ruth Elizabeth; *Cleveland, Okla.*
 Neely, Allen Feild; Topeka.
 Nelson, Gladys Helen; Lawrence.
 Nelson, Marguerite Isabell; Lyons.
 Nelson, Richard Robinson; Fort Scott.
 Nettels, Curtis Putnam; Topeka.
 Nevitt, James Russell; Mildred.
 Nicholson, Helen Julia; Lawrence.
 Nicolet, Charles Cathcart; *Kansas City, Mo.*
 Nigg, Clara Ida; Lawrence.
 Nufer, Walter Leroy; Florence.
 Oberhelman, Elvina Marie; Leonardville.
 O'Connor, William Thomas; Fort Scott.
 Oder, Catherine Louise; Lawrence.
 Oles, Paul Steveson; Independence.
 Olsen, Grace Marguerite; Lawrence.
 Olsen, Mary Carolyn; Lawrence.
 Olson, Helen Edith; Topeka.
 Orelup, Frank M.; Lawrence.
 Oswald, Anthony Lewis; Hutchinson.
 Painter, David Howard; Medicine Lodge.
 Painter, William Milton; Conway Springs.
 Palmer, Cyril Linton; Waterville.
 Palmer, Harold William; Greeley.
 Palmer, Randolph Lindley; Jewell.
 Patterson, Doris Kathryn; Lawrence.
 Patterson, Lester Sproull; Lawrence.
 Payne, Mildred M.; Hutchinson.
 Peacock, Vera Maude; Blue Rapids.
 Pendleton, Theodore Poehler; Lawrence.
 Pennington, Clifford Alton; Hutchinson.
 Perry, Walter LeRoy; Concordia.
 Phipps, Harry Kipling; Chanute.
 Pierce, Willard Brewer; *Kansas City, Mo.*
 Plant, Archie Byron; Wichita.
 Poindexter, Mary Lourinda; Kansas City.
 Porter, John McGill; Topeka.
 Porter, Ralph Brook; Blue Mound.
 Potter, Mamie Belle; Frankfort.
 Priest, James Michael; Concordia.
 Purdy, Luke Norris; Medicine Lodge.
 Putney, David Harrison; Leavenworth.
 Quinlin, Virginia Josephine; Lawrence.
 Radotinsky, Ida; Kansas City.
 Rarig, Edith Lucile; Lawrence.
 Ray, Hartzell Harrison; Marion.
 Rea, Hazel Irvin; Hays.
 Read, Harold Frederick; St. Mary.
 Reeves, Blanche Bernice; Lawrence.
 Remely, Royal McClellan; Glasco.
 Remsberg, Ella May; Iola.
 Rhodes, Pauline Ann; *Hennessey, Okla.*
 Richards, Edward Watterson; *Bishop, Cal.*
 Rickert, Ruby Carroll; Haddam.
 Rieger, Herbert; Wichita.
 Rising, Edna Rose; Lawrence.
 Ritter, Cassandra; Iola.
 Robb, Mary Gertrude; Chapman.
 Roberts, Clieo Marion; Parsons.
 Robertson, Laura Purcell; *Kan. City, Mo.*
 Robinson, Cecelia Margaret; Potter.
 Rodney, Myrril; Abilene.
 Rogers, Victor Menkins; Wichita.
 Ross, Floyd Willis; Sterling.
 Rule, Helen Josephine; Wellington.
 Russell, Ruth; Great Bend.
 Samson, Margaret Jeanne; Valley Falls.
 Samuel, Mary Elizabeth; Hiawatha.

FRESHMEN—continued.

- Schafer, Sidonie Pauline; McPherson.
 Schick, Fern; Lawrence.
 Schoonover, John Ansel; Lyons.
 Schumann, Margaretha; Lawrence.
 Scott, Maynard W.; Rozel.
 Scoville, Hubert Freeman; Valley Falls.
 Senor, Samuel Earl; *St. Joseph, Mo.*
 Sevilla, Pedro; *Honduras, C. A.*
 Shafer, Jeannette; Lawrence.
 Shaklee, Marie Elsie; *Waukomis, Okla.*
 Shannon, Winifred; Iola.
 Sharp, Elrick Cole; Topeka.
 Shaw, Margaret Viola; *Thomas, Okla.*
 Shearer, Winona Josephine; Lawrence.
 Shelton, Edgar Palmer; Independence.
 Shepherd, Paul Arthur; Harveyville.
 Sheppard, Reba Ellen; *Lamar, Mo.*
 Shields, Adrian Michael; *Nashua, Iowa.*
 Shillerston, Dewey; Lawrence.
 Simonton, Margaret Locke; *Wendell, Idaho.*
 Sinnet, Caryl D.; Cherryvale.
 Sisson, George Horatio; Yates Center.
 Skaer, Fern Viola; Lawrence.
 Slade, Sam George; *Kansas City, Mo.*
 Slavens, Jean; *Kansas City, Mo.*
 Slonaker, John Orin; Lawrence.
 Smith, Henry Dee; Lawrence.
 Smith, Meda Estella; Paola.
 Smith, Nellie; Horton.
 Snyder, Madeline Eugene; Wichita.
 Sorrell, Vernon Guy; Glen Elder.
 Staatz, Arthur Edward; Enterprise.
 Stacey, Frank Baker; Leavenworth.
 Stafford, William Frasier; Stafford.
 Stanley, Blanche Elizabeth; *Okla. City, Okla.*
 Stauffer, Nina Aldeau; Randall.
 Steen, Myrtle Winnifred; *Kansas City, Mo.*
 Steinle, John David; Russell.
 Stone, Anna; Lawrence.
 Stout, Forrest Dwight; Medicine Lodge.
 Stratford, Jane Gussie; *El Dorado.*
 Stringfellow, Fred Conway; McPherson.
 Strong, Muriel; Lawrence.
 Sturgeon, John Martel; *Thomas, Okla.*
 Sturman, Madeline; Gove.
 Sutton, Agnes Whitneg; Lawrence.
 Swartz, Dorothy Vincent; Newton.
 Sweet, Fred Louis; Chanute.
 Sweigart, Gladys Naomi; Lawrence.
 Swenson, Clarence Godfrey; *Kan. City, Mo.*
 Syster, Ruth Isabelle; Hiawatha.
 Tann, Helen Jane; Lawrence.
 Tanner, Robert Karl; *Pueblo, Colo.*
 Taylor, Edwin Moses; Hoxie.
 Teichgraeber, Oscar Fred; Emporia.
 Temple, George Robert; Wichita.
 Tenney, Asa Clifford; Kansas City.
- Terrell, Eppinetta Valeria; Lawrence.
 Testerman, Minnie; Lawrence.
 Thompson, Jean; Junction City.
 Thompson, Roy Bertram; Marion.
 Thornburg, Irene Christine; *El Dorado.*
 Thurman, Josephine; *Joplin, Mo.*
 Thurston, Helen Margaret; Kansas City.
 Tiemann, Frieda Eulalia; Stafford.
 Tomlinson, Victor Rees; Independence.
 Transue, Minnie Maude; Summerfield.
 Treat, Sylva Louise; Kansas City.
 Tucker, Georgia; Elkhart.
 Varner, Ethel; Augusta.
 Varner, Ralph; Augusta.
 Vermillion, Frank Howard; Lyons.
 Wackerle, Golda Marie; Lawrence.
 Wackerle, Harold Elmer; Chetopa.
 Waggener, Balie Peyton; Atchison.
 Waggener, Mark Spurr; Atchison.
 Walbridge, Caroline Knickerbacker; Russell.
 Wanamaker, Elnora Frances; Blue Rapids.
 Warring, Kathleen Frances; *Kan. City, Mo.*
 Wasson, Margaret E.; *Cleveland, Okla.*
 Waterman, Sheldon Ward; Kansas City.
 Watson, Margaret Jane; Turon.
 Weatherford, Wilma; Kansas City.
 Weibel, Nadene; Lawrence.
 Weller, Eldon Bradford; Blue Rapids.
 Wharton, C. Elaine; Parsons.
 Wheeler, Hayward Coars; Hiawatha.
 White, Marjory Jean; Eudora.
 White, Roby Byron; Neodesha.
 White, Meldon Ludy; *Kansas City, Mo.*
 Wiberg, Lawrence C. E.; Clay Center.
 Wiese, Albert; Florence.
 Wilcox, Arthur LaVern; Abilene.
 Wilcox, Fred James; Cottonwood Falls.
 Wilhoit, John William; St. George.
 Wilkerson, Vernon Alexander; Kansas City.
 Williams, Alfred B.; Preston.
 Williamson, Odessa Florence; Burlington.
 Wilson, Donald Maxwell; *Warrensburg, Mo.*
 Wilson, Gail Elery; Beloit.
 Wilson, Joseph C.; Stafford.
 Wilson, Margaret Mary; Meade.
 Windhorst, Dora Mayrella; Belpre.
 Winkler, John Joseph; Maple Hill.
 Wirth, Bernard A.; Red Wing.
 Wishard, Mary Elizabeth; Iola.
 Withers, Orval Raymond; Pratt.
 Woelk, Rudolph John; Russell.
 Wolfley, Dorsey Murl; Goffs.
 Wood, Theodore Francis; Bethel.
 Young, Alice McDonald; Lawrence.
 Young, Charles Morton; Lawrence.
 Young, Vivian Genevieve; Lawrence.

FRESHMEN, 542.

SPECIALS.

- Aaron, Madeleine Germaine; Wichita.
 Achten, Ethel Ione; Wetmore.
 *Allen, Olive Grace; Sedgwick.
 *Alport, Abraham; Coffeyville.
 *Barber, Katherine Mary; Holton.
 Barbour, Louis Wallace; Wellington.
 Beghtol, Fern Anna; *Kansas City, Mo.*
 *Bell, Laura Ellen; Kansas City.
 *Benschmidt, Newton A.; Hutchinson.
 *Blanco, Simon; *Bulacan, P. I.*
 *Braman, Ellis J.; Manhattan.
 Brond, Joe C.; *Wilna, Russia.*
 Buckles, Mrs. Myra; Elgin.
 *Cameron, Anna; Winfield.
 Carter, Madilene Elizabeth; Lawrence.
 *Constant, Olive Jane; Lawrence.
 *Cook, R. Vergil; Mulberry.
- *Cromb, Neva Margaret; Ellis.
 Curry, Nellie B.; *Kansas City, Mo.*
 *DeVoe, George Melville; Lawrence.
 *Drought, Doris; Kansas City.
 *Drury, Ray C.; Newton.
 Dunn, Esther Campbell; LeLoup.
 *Eastlake, Marion; *Kansas City, Mo.*
 *Ellison, Leta Maude; Lawrence.
 *Embry, Cecil Porter; Wichita.
 Ewart, Chester Harold; Minneapolis.
 *Eyerly, Hubert; Nortonville.
 Farris, Olen Rupert; Norwich.
 *Flynn, Joseph John; Parsons.
 Foster, Marguerite Belle; *Kansas City, Mo.*
 Frame, Ethel Lovey; Bonner Springs.
 *Galloway, MaBelle Irene; Lawrence.
 *Gillette, Esther; Manhattan.
 *Gorman, Joan Bess; Chapman.

*Enrolled in another school of the University.

SPECIALS—continued.

- Gray, Allie; *Bernice, La.*
 Grinter, Phyllis Josephine; Lawrence.
 *Hake, Wallace Otto; Minneapolis.
 *Hargett, Jay Earl; Lawrence.
 *Havekors, Walter B.; Hanover.
 Hawkins, Wiley T.; Winfield.
 Hedges, Anna Emma Florence; Elk City.
 Hill, Roland Vaughn; Wichita.
 Holt, Emile; Lawrence.
 Hook, Dorothy; Leavenworth.
 Hook, Ruth; Leavenworth.
 *Hoover, John Hevner; Lawrence.
 *Horsley, Hazel; Wichita.
 *Howard, Roscoe D.; Peck.
 *Howland, Herbert; Ludell.
 *Humphrey, Anita; Chanute.
 *Huoni, Josephine Ruth; *Kansas City, Mo.*
 Johnson, Mrs. Clara; Lawrence.
 *Johnson, Emsley Thomas; Lawrence.
 *Jones, Wilbur Harold; Wichita.
 *Kell, Helen Hillman; Lawrence.
 Kennedy, William Edward Craig; Lawrence.
 Kirwan, Ida Cora; Bendena.
 *Knight, Nathaniel Passmore; Lawrence.
 *Krebs, Julius John; Lawrence.
 Krueger, George H.; Lawrence.
 *Lacy, Pearl Hazel; Lawrence.
 Lassen, William Henry; Wichita.
 *Lockwood, Howard; Atchison.
 Logan, Albert Willard; Lebanon.
 Logan, Helen Aline; Pawnee Rock.
 Luckan, Charlotte Marguerite; Lawrence.
 MacIvan, Donald Herbert; Abbeyville.
 *Marrs, Jay Dean; Lawrence.
 Martin, Sibyl; Lawrence.
 *Meyers, Percy A.; Lawrence.
 Miller, James Ellsworth Burney; Iola.
 *Murphy, Bryan; Leavenworth.
 *Murphy, John D.; Perth.
 McCandless, Earl; Hutchinson.
 *McColloch, Clark; Lawrence.
 *McElroy, John Willis; Harper.
 McIntee, Matthew Benedict; Lawrence.
 McKee, Laura Ethel; Lawrence.
 *McManus, Irene; Newton.
 *Neighbors, Glen Moomaw; McPherson.
 *Nelson, Gladys; Lawrence.
 *Nevins, Gertrude Isabel; Blue Rapids.
 Noid, J. Arthur; Topeka.
 *Nystrom, Martin Joseph; Topeka.
 Orr, James Wrae; Topeka.
 Ott, Charles William; Eudora.
 Paramore, Roy Clayton; Larned.
 *Patty, Frank Arthur; Lawrence.
 *Pickerell, Earl Ray; Greensburg.
 *Pittinger, Laura Wilhelma; Arkansas City.
 *Plumb, Luella; Topeka.
 *Prather, Orra; Winfield.
 Rader, Amy VanHorn; Lawrence.
 *Raub, Lorna Marie; Lawrence.
 *Rice, Alice; Lawrence.
 Rigby, Millard Frederick; Topeka.
 *Rinehart, William G.; Lawrence.
 *Roberts, Edna May; Greensburg.
 Rose, Mary E.; Lawrence.
 Russell, Iris; Kansas City.
 *Sawyer, Donald Louis; Lawrence.
 *Sheidley, Hubert O.; *Kansas City, Mo.*
 *Smith, Cecil Adams, Elkhart.
 *Smith, Elwin Leslie; Colony.
 *Smith, Errett Garrison; Delphos.
 Smith, Grant Robert; Lawrence.
 *Smith, Mrs. Mildred Christie; Waverly.
 *Smith, Otis Dale; Seneca.
 Smith, Mrs. Wint; Formoso.
 Suffield, Charles L.; McPherson.
 *Summers, Myra Cochran; Lawrence.
 *Sutterlin, Pearl Estella; Alta Vista.
 Talbert, Vesta; Conway Springs.
 Thomas, Mrs. Chas. Leonard; Lawrence.
 Thomas, Mildred Clare; *Kansas City, Mo.*
 Todd, George Cleveland; Lawrence.
 *Ulrich, Ethel Lenore; Lawrence.
 *Walsh, Charles Albert; Beloit.
 Watson, Elsie Cora; Lawrence.
 *Weltmer, Wardie W.; Smith Center.
 *White, Bernice; Mankato.
 Wiggins, Dorothy; *Kansas City, Mo.*
 Wiggins, Gertrude; *Kansas City, Mo.*
 *Wild, George Rader; *Kansas City, Mo.*
 Wilson, William Wayne; Augusta.
 *Woodward, Victor D.; Delphos.
 Young, Gertrude Mary; Kansas City.

SPECIALS, 128.

*Enrolled in another school of the University.

SCHOOL OF ENGINEERING.

SENIORS.

Abraham, Louis Jerome; Rosalia.
 Akers, Charles Edward; Lawrence.
 Asendorf, William Fred; Garden Plain.
 Bowman, George Monroe; Lawrence.
 Brown, James Vittitow; Dillwyn.
 Brown, William Rollie; Lawrence.
 Clark, Rowland Jesse; Lawrence.
 Crum, Harry Edwin; Lawrence.
 Dueker, Milton Stanley; Lawrence.
 Fair, George Harlan; Lawrence.
 Farley, Samuel Frank; Lawrence.
 Frier, William Thomas; Russell.
 Gish, Henry John; Abilene.
 Haines, William Mattison; Chanute.
 Hough, Cecil Thomas; Lawrence.
 Hull, Louis Milton; Norton.
 Kitchen, Edgar Roy; Rosedale.
 Krebs, Julius John; Lawrence.
 Lutz, Hobart Fred; Lawrence.
 Lynn, Clarence; Lawrence.
 Maloney, Owen Wayne; Lawrence.
 Marrs, Jay Dean; Lawrence.

Marshall, Hugh; Lawrence.
 Mickey, Samuel Waite; Junction City.
 Miles, Robert Cullen; Lyndon.
 McMillen, B. LeRoy; Minneapolis.
 Nelson, James Valentine; Hutchinson.
 Neumann, Warren Randolph; Lawrence.
 Palkowsky, Henry William; Collyer.
 Park, Bartholow; Atchison.
 Pickering, Walter Roscoe; Galena.
 Schoenfeldt, Edward Hermann; Independence.
 Schroepfer, August Michael; Wamego.
 Shreve, John Donald; White Cloud.
 Shughart, Charles Lester; Winchester.
 Staggs, Horace Mitchell; *Hennessey, Okla.*
 Uhrlaub, Rudolph Reinhart; Lawrence.
 Van Houten, Harold C.; Topeka.
 Waggoner, Jack Holmes; Lawrence.
 Wagner, Page Paschal; Concordia.
 Walters, Fay Clarence; Lawrence.
 Warner, Robert Wilberforce; Topeka.

SENIORS, 42.

JUNIORS.

Arnold, Ereil Clyde; Chapman.
 Benscheidt, Newton; Hutchinson.
 Boyd, Arthur Carl; Larned.
 Brown, Rex Leno; Lawrence.
 Buck, William Emanuel; Rosedale.
 Butcher, Cary Preston; Kansas City.
 DeVoe, George Melville; Lawrence.
 Egan, Kyran William; Lawrence.
 Elledge, Emmett Russell; McCune.
 Gearhart, Walter Russell; Englewood.
 Heariold, Frank Cecil; Hutchinson.
 Holt, Hobart Clayton; Topeka.
 Johnson, Samuel Chester; Pittsburg.
 Keener, Charles Alva; Lawrence.
 LaMer, Joseph Secundule; Leavenworth.
 Leary, Ora George; Kansas City.
 Limbocker, Wayne Ernest; *Independence, Mo.*
 Mace, Olin Eugene; St. John.
 Mahan, Joe Rossinger; Independence.
 Mathews, Claude Kelsey; *Kansas City, Mo.*
 Melvin, Laighton Russell; Lawrence.
 Moore, Earl M.; Lawrence.
 McCall, Dana Hewitt; Hiawatha.

Nitchy, George Walter; Lawrence.
 Penny, Myrl; Effingham.
 Perkins, Lucius Junius; Lawrence.
 Pickering, Ernest; Lawrence.
 Quinlan, Amos Lawrence; Linwood.
 Rose, Ernest Herbert; *Rowe, N. Mex.*
 Seybold, John Statis; Topeka.
 Sherwood, Leon Archibald; Independence.
 Smith, Arthur J.; *Independence, Mo.*
 Sorgatz, William David; Concordia.
 Stevenson, Clyde Duncan; Lawrence.
 Stoudt, William Edwin; Winfield.
 Strickland, Paul William; Lawrence.
 Tate, James Noell; Lakin.
 Thralls, Warren Harrington; Wellington.
 Tuttle, Ellsworth, Grant; Winfield.
 Walters, Ray Pearce; Lawrence.
 Wehmeyer, Edmund Herman; Kansas City.
 White, Karl Hardy; Lawrence.
 Williams, James Orla; Columbus.
 Wolfe, Roland John; Horton.

JUNIORS, 44.

SOPHOMORES.

Albach, John Henry; Lawrence.
 Armel, Nathaniel Amos; Humboldt.
 Atha, Joseph Samuel; Kansas City.
 Barber, Ira Everett; Humboldt.
 Beisner, Harold Owen; Natoma.
 Benson, John Leland; Lawrence.
 Blum, Howard Freeman; Kansas City.
 Boman, Tom Glen; Chanute.
 Bowersock, Ivan Walter; Wayside.
 Bowersock, Wilber Earl; Lawrence.
 Brady, William Ignatius; *Independence, Mo.*
 Brink, Ernest Harold; Lawrence.
 Brockett, Harold Fletcher; Lawrence.
 Buffington, Chalmer Dale; Ness City.
 Bunn, John William; Humboldt.
 Caler, William Richard; Claflin.
 Carman, Julia; Herington.
 Carinody, Robert Arthur; Fredonia.
 Clark, Roy Henry; Lawrence.
 Doane, Philip Dann; Arkansas City.
 Drake, Charles Jackson; Jewell.
 Eagles, Homer Moore; Thayer.

Eckel, Carl Henry; Douglass.
 Etzenhouser, Russell; Hutchinson.
 Ewart, John Lewis; Minneapolis.
 Farnsworth, Clyde Arthur; Douglass.
 Fitzgerald, Edgar James; *Roswell, N. Mex.*
 Fox, Paul Samuel; Lawrence.
 Ghrist, David Austin; Kansas City.
 Googins, Guss Livingston; Fredonia.
 Gray, Lawrence Corwin; Kansas City.
 Guy, Erwin Leo; Sedan.
 Haddock, Marshall; Rosedale.
 Hale, Robert Kenneth; Eureka.
 Hall, Walter; Lawrence.
 Hersha, Benjamin Dawson; Partridge.
 Hoiekvam, Donald Berger; Lawrence.
 Hughes, Charles Donald; Lawrence.
 Icenhower, William M.; Lawrence.
 Jakowsky, John Jay; Independence.
 Kendall, Erwin Kenneth; Lawrence.
 Kendall, Frederick Calvin; Kansas City.
 Kendall, Russel Rex; Lawrence.
 Klamet, Henry Leonard; Tonganoxie.

SOPHOMORES—continued.

Kohman, Giarard Theodore; Dillon.
 Lampton, Fred Franklin; Cherokee.
 Latta, John Hardy; Wichita.
 Lauritsen, Niels Lauritz; Kansas City.
 Lefevre, Armand Joseph; Caney.
 Ludlow, Stewart; Lawrence.
 Lutz, George John; Cawker City.
 Lynn, George; Lawrence.
 Machamer, Hobart Ellis; Kansas City.
 Magill, Russell Charles; Lawrence.
 Malkmus, George Adolf; *Kansas City, Mo.*
 Melton, Robert Thomas; Tecumseh.
 Merritt, Paul Prowers; McCune.
 Meyers, Percy Avery; Lawrence.
 Nettels, George Edward; Topeka.
 Olhausen, Frank; Leavenworth.
 Olmsted, Herbert Wolcott; Lawrence.
 Cwen, Toby Allison; Fort Scott.
 Ozenberger, Ralph Lee; *St. Joseph, Mo.*
 Patterson, F. B.; Atchison.
 Pruett, Clarence Grant; Macksville.
 Ransom, Paul; Pittsburg.

Roush, Fossie Eber; Jewell.
 Ryan, Royal Rufus; Chapman.
 Sackett, Guy Elliott; Lawrence.
 Salisburg, Walter Wayne; Osawatomie.
 Sanborn, Austin Phelps; Chapman.
 Sandifer, Robert Pattison; El Dorado.
 Schenck, Lawrence; Topeka.
 Sheidley, Hubert Orlandus; *Kansas City, Mo.*
 Shepard, Ross; Chapman.
 Smith, Xenophon Palmer; *Kansas City, Mo.*
 Stephenson, Russell Allen; Tonganoxie.
 Stevenson, R. Barton; *Kansas City, Mo.*
 Thomas, George Fessler; Burlingame.
 Walker, Carl L.; Lawrence.
 Weidman, Donald Theodore; Wichita.
 Wells, Benjamin Finley; *Kansas City, Mo.*
 Wenzel, John Herman; Enterprise.
 Whisler, Daniel Howard; Fort Scott.
 Williams, Charles Alvin; Lawrence.
 Wright, North Alderman; Atchison.

SOPHOMORES, 86.

FRESHMEN.

Abbey, Harry Jefferson; Galena.
 Adair, Albert S.; Lawrence.
 Allison, Royden Earl; Princeton.
 Alport, Abraham J.; Coffeyville.
 Andrews, Lale Clark; *Kansas City, Mo.*
 Appleby, Harry Addison; Cedar Vale.
 Baker, Lloyd William; Kansas City.
 Barter, Harry Absalum; Dodge City.
 Barter, Leland Lasater; Dodge City.
 Beltz, Willis Henry; Weir.
 Benson, Dale Louis; Greeley.
 Berrey, Cecil Raymond; Wilmore.
 Black, Ralph Leland; Burlingame.
 Bown, William Forest; *Kansas City, Mo.*
 Bradshaw, George Watson; Randall.
 Brown, Adelbert Charlton; Halstead.
 Brown, Laurence Wayne; Lawrence.
 Brown, Ruth Davis; Coffeyville.
 Butler, Bishop Armand; *Raton, N. Mex.*
 Caldwell, Cecil Clifford; McPherson.
 Calene, Edwin Le Roy; Sylvan Grove.
 Cave, Aubrey La Verne; *Lone Jack, Mo.*
 Chapman, Earl William; Glasco.
 Cline, Glenn William; Fort Scott.
 Constant, John Laurence; Lawrence.
 Cornelius, Paul Dean; *Kansas City, Mo.*
 Craig, Kenneth; Kansas City.
 Cressler, Allie Vinton; Grainfield.
 Dance, Mark Granville; Pittsburg.
 Davidson, Bradner C.; Lawrence.
 Dean, Edward Clay; Richfield.
 Dingess, Carl Witcher; Atchison.
 Dixon, William Joseph; Kansas City.
 Dole, Floyd Harris; Russell.
 Dunwoody, Gerald Axtell; Parsons.
 Elvey, Christian Thomas; Coffeyville.
 Eyer, Donald B.; Manhattan.
 Farnsworth, Frank Jay; Douglass.
 Fellay, Paul Theodore; Madison.
 Ferguson, Raymond Wheeler; Topeka.
 Fisher, Julian Watkins; Sabetha.
 Fitch, Algie Harlie; Arkansas City.
 Flack, Herron Thomas; Fredonia.
 Fleming, James Leo; *Kansas City, Mo.*
 Ford, Elson Asabel; Topeka.
 Fuller, Victor Sanford; Junction City.
 Gatewood, Ralph Albert; Sylvan Grove.
 Gibson, Albert Glenn; McCune.
 Goodnow, Frank Weston; Forest Lake.
 Ham, Ira Jacob; Prescott.
 Harker, Vivian Jewel; Belton.
 Havens, Albert L.; Luray.
 Hayden, Willard Henry; Lawrence.
 Henderson, Russell Stewart; Lawrence.
 Herthel, Ruth; Clafin.
 Herwig, Frederick William; Kansas City.
 Holland, Paul Oscar; Pleasanton.

Hovey, Stuart Fletter; Kansas City.
 Hunter, Robert Francis; *Kansas City, Mo.*
 Isern, Elmer Henry; Ellinwood.
 Ismert, Clement Anthony; Kansas City.
 Johns, George Williams; Moline.
 Jones, Clifford Bunch; Jewell.
 Jones, Wilbur Willard; Neodesha.
 Judkins, Bert Chaffin; *Pateau, Okla.*
 Kanode, Ralph Dewey; Topeka.
 Kietzmann, Emil Arthur; Alta Vista.
 Kinkel, John Franklin; Topeka.
 Knight, James Madison; Richmond.
 Knoblauch, George John; Wichita.
 Koehring, Gertrude Florence; Lawrence.
 Kruse, Harvey Reed; Halstead.
 Larson, Albert C.; Scandia.
 LaSarge, Vergil; Arkansas City.
 Lemen, Laurence Claude; Spring Hill.
 Leslie, Charles Edmond; St. John.
 Leverich, Warren Hume; Kansas City.
 Lockwood, Howard; Atchison.
 Long, Hiram Chester; Winston.
 Loudon, Earl Riley; Chapman.
 Love, Edwin Kingsley; Lawrence.
 Luecke, Carl Leon; *Joplin, Mo.*
 Lusk, Howard Brian; Olivet.
 Malleis, Harry; Halstead.
 Martin, Wallace Ingersoll; Kansas City.
 Marxen, Frank Adam; Piper.
 Mason, Warren Perry; Lawrence.
 Meek, Lewis Collins; Ellsworth.
 Meng, Carl Leroy; Spring Hill.
 Messmore, Harold Eli; Morrill.
 Mims, Leonard Hassan; Kansas City.
 Mohler, Charles H.; Coffeyville.
 Munch, George Del; Concordia.
 Murphy, Fred; Kansas City.
 Myers, Jared L.; Alden.
 McClintic, La Rue; Baxter Springs.
 McLean, James Dean; Lawrence.
 Neiswender, Thurlow Levi; Rossville.
 Neubauer, Laurence Jesse; Lawrence.
 Noe, LeRoy Ernest; Wetmore.
 Nutt, Donald Franklin; Lawrence.
 O'Donnell, John Joseph; Leavenworth.
 Opocensky, Joseph Frank; Cuba.
 Park, Benjamin Paul; White Cloud.
 Parker, Charles Reed; *Tulsa, Okla.*
 Pence, Willis Earl; Baldwin.
 Pepper, John Andrew; Conway Springs.
 Peters, Harry Stephen; Minneapolis.
 Pleasant, Joe; Burlington.
 Price, Myron Hugh; Liberty.
 Puffer, Charles Oliver; Burlington.
 Remmers, George Lawrence; Marion.
 Roberts, Donald Francoids; Lawrence.
 Rogers, Wilmer Howard; Newton.

FRESHMEN—continued.

Rupard, Homer; *St. Joseph, Mo.*
 Salome, William Charles; *Mt. Hope.*
 Savage, Roger William; *Topeka.*
 Schaplowsky, Andrew Benedict; *Halstead.*
 Schwartz, Charles Laurent; *Topeka.*
 Sherman, Marvin Osmer; *Kansas City.*
 Shoemaker, Clarence Grant; *McLouth.*
 Short, Albert Luther; *Leavenworth.*
 Sinnard, Melbourne Fredourne; *Pleasanton.*
 Smith, Cecil Adams; *Elkhart.*
 Smith, Howard Vaughn; *Burlingame.*
 Smith, Zella Floyd; *Thayer.*
 Snare, Raymond Jordan; *Abilene.*
 Snyder, Paul Cline; *Hutchinson.*
 Soxman, Lee Forest; *Lawrence.*
 Stauffer, John Manasses; *Randall.*
 Stewart, John Robert; *Hutchinson.*
 Stranathan, James Docking; *Wilsey.*
 Stucker, Harry McCartney; *Ottawa.*
 Surges, Russell; *Concordia.*
 Tatum, Richard Edwin; *Lawrence.*

Thomas, Lewis Henry; *Louisburg.*
 Thomas, Llewelyn Hobbert; *Baxter Springs.*
 Todd, John Malcolm; *Fort Scott.*
 Troughton, Thomas; *Seneca.*
 Turner, Joseph Harold; *Howard.*
 Wagner, William Herman; *Independence.*
 Wahlstedt, John Robert; *Kansas City, Mo.*
 Walther, Dennis J. Logsdon; *Lawrence.*
 Warner, Lawrence Dean; *Weatherby, Mo.*
 Watters, John William; *Lawrence.*
 Webster, Redford Thayer; *Kansas City, Mo.*
 Weir, Earl J.; *Spring Hill.*
 Weis, Orville Edward; *Thayer.*
 Welch, Ray; *Dighton.*
 Wells, William Bacon; *Lewis.*
 Wendling, Glen Harold; *Arlington.*
 Williams, Milo Ryan; *White Cloud.*
 Wilson, Clinton; *Twin Bridges, Mont.*
 Wilson, Dean Bruce; *Topeka.*
 Zimmerman, Walter; *Kansas City.*

FRESHMEN, 155.

SPECIALS.

*Anderson, Lind McKinley; *Downs.*
 *Bailey, George Luther; *Topeka.*
 *Barbour, Louis Wallace; *Wellington.*
 *Barteldes, Armin George; *Lawrence.*
 *Bennett, Horace R.; *Effingham.*
 *Blazier, Warren Eugene; *Galena.*
 *Boese, Adolf; *Hillsboro.*
 *Boone, Franklin Goerge; *Manhattan.*
 *Brady, Harold R.; *Kansas City, Mo.*
 *Brummitt, Wyatt Brearley; *Evanston, Ill.*
 *Brush, Harriett Elizabeth; *Lawrence.*
 *Buffington, Chalmers Dale; *Ness City.*
 *Burgert, Eran Omer; *Lawrence.*
 *Carey, Walter Ray; *Osage City.*
 *Clayton, Ross Herbert; *Lawrence.*
 *Coffelt, Gola William; *Blue Mound.*
 *Cox, Harold Bernard; *Cedar Vale.*
 *Cummings, Jack; *Barnard.*
 *Dietrick, Carl C.; *Miltonvale.*
 *Dolbee, George Henry; *Lawrence.*
 *Elliott, Dempsey W.; *Lawrence.*
 *Friend, Russell DeVere; *Lawrence.*
 *Goff, Nancy M.; *Lawrence.*
 *Graham, Hilton Wescott; *Hiawatha.*
 *Gunn, Everett; *Nickerson.*
 *Hackley, Harry D.; *Burlington.*
 *Harris, Joseph Pratt; *Windom.*
 *Hay, Laurence C.; *Paola.*
 *Hilton, Willard Ordway; *Cottonwood Falls.*
 *Hindman, Albert Henry; *Lawrence.*
 *Husband, Myron William; *McPherson.*
 *Jeter, Gilbert Troy; *Oklahoma City, Okla.*
 *Joslin, Leeman Charles; *Bavaria.*
 *Kiefer, Everett Doane; *Lawrence.*
 *Konantz, Joseph S.; *Glade.*
 *Lichty, Ralfe Erwin, *Salina.*
 *Loflin, Beulah Eddeline; *Ellis.*

*Logan, Albert Willard; *Lebanon.*
 *Lynn, Robert H.; *Garden City.*
 *Mack, Alberta; *Lawrence.*
 *MacMurray, Arthur Cooper; *Lawrence.*
 *Martin, Francis Ivan; *Douglass.*
 *Martin, Wayne G.; *Salina.*
 *Maxwell, Edward Charles; *Leonardville.*
 *Mellenbruch, Dale Franklin; *San Juan, Tex.*
 *Metcalf, Ralph H.; *Kansas City, Mo.*
 *Moulton, Edward William; *Neodesha.*
 *McConnell, William Howard; *Lawrence.*
 *McFadden, Herbert C.; *Chanute.*
 *McHale, Geraldine; *Kansas City.*
 *McIntire, George Franklin; *Wichita.*
 *Nystrom, Martin Joseph; *Topeka.*
 *Orelup, Frank M.; *Lawrence.*
 *Pearson, Edith Sarah; *Lawrence.*
 *Peckham, Jacob Walter; *Clay Center.*
 *Preble, Clarence Fred; *Hutchinson.*
 *Puckett, Louis Hunter; *Galena.*
 *Raymond, Walter A.; *Rago.*
 *Rourke, George W.; *Topeka.*
 *Rutherford, Paul Judson; *Wellington.*
 *Stevens, Roy N.; *Lawrence.*
 *Todd, John Edward; *Lawrence.*
 *Tunney, Hubert James; *Cleveland.*
 *Wackerle, Harold Elmer; *Lawrence.*
 *Walch, Charles Albert; *Beloit.*
 *Wattles, Warren Fay; *Wichita.*
 *Welty, Donald Regnier; *Barlesville, Okla.*
 *Wilbur, Clifford Henry; *Lawrence.*
 *Wilcox, Arthur LaVern; *Abilene.*
 *Wilson, Leland Alvin; *Chanute.*
 *Woody, Warren Vernon; *Barnard.*
 *Wulfekuhler, Irving William; *Leavenworth.*

SPECIALS, 72.

*Enrolled in another school of the University.

SCHOOL OF FINE ARTS.

SENIORS.

Allen, Sarah Frances; Lawrence.
 Fitch, Margaret Elizabeth; Lawrence.
 Gossard, Mary Elizabeth; Oswego.
 Hopkins, Ednah Evelyn; Lawrence.
 Lacy, Pearl Hazel; Lawrence.
 McCaules, Eva Josephine; Lawrence.

Nelson, Gladys; Lawrence.
 Nusz, Marie; Abilene.
 Pendleton, Emma Helen; Lawrence.
 Rice, Alice; Lawrence.
 Thrall, Mildred E.; Neosho Falls.

SENIORS, 11.

JUNIORS.

Ainsworth, Elizabeth; Lyons.
 Bell, Ida Dorothy; Lawrence.
 Constant, Olive Jane; Lawrence.
 Dietrich, Claire Lilburn; Ottawa.
 Dolechek, Christine Antionette; Ellsworth.
 Doyle, Gertrude Lois; Kansas City.
 Gardner, Mabelle Pearl; Neosho Falls.
 Geselbracht, Mrs. Emma Dill; Lawrence.
 Haworth, Rose Elizabeth; Lawrence.

Merritt, Miriam; Independence.
 Peairs, Helen Haskell; Lawrence.
 Riddle, Dorothy Winifred; Herington.
 Weed, Helen Irene; Lawrence.
 Wharton, Thelma Isabelle; Parsons.
 Whitcroft, Ruby Harriett; Lawrence.
 White, Essie Bernice; Mankato.
 Wolley, Hazel; Liberal.

JUNIORS, 17.

SOPHOMORES.

Bair, Ava; Lawrence.
 Batcheller, Norma; Lawrence.
 Blackman, Viola Caroline; Chanute.
 Boyington, Thelma Lucile; Bird City.
 Cook, Helen Letha; Coffeyville.
 Creek, Olive May; *Kansas City, Mo.*
 Drought, Doris Faith; *Kansas City.*
 Ellison, Leta Maude; Lawrence.
 Elmore, Lucille Gertrude; Topeka.
 Gorman, Joana Bess; Chapman.
 Gregg, Helen Corinne; McCune.
 Grossenbacher, Sophia Elizabeth; Bern.
 Hargett, Marion; Lawrence.
 Humphrey, Anita Josephine; Chanute.
 Huoni, Josephine Ruth; *Kansas City, Mo.*
 Imus, Irene; *St. Joseph, Mo.*
 Kell, Helen Hillman; Lawrence.
 Leach, Fred George; *Arkansas City.*
 Martin, Mary; *Kansas City, Mo.*

McManus, Irene; Newton.
 Nelson, Gladys Irene; Neodesha.
 Nevins, Gertrude Isabel; Blue Rapids.
 Novel, Doris Reita; *Kansas City, Mo.*
 Phinney, Helen Lucille; Oskaloosa.
 Pittenger, Lena Wilhelma; *Arkansas City.*
 Porter, Helen Mary; Larned.
 Raub, Lorna Marie; Lawrence.
 Roberts, Edna May; Greensburg.
 Scheer, Marian; Paola.
 Shane, Mildred Dora; *Kansas City, Mo.*
 Smith, Mrs. Mildred Christie; Waverly.
 Stout, Bessie; Cherryvale.
 Stout, Grace Marie; Cherryvale.
 Summers, Myra Cochran; Lawrence.
 Tudor, Mary Margaret; Holton.
 Ubrich, Frances Dorothy; *Kansas City.*

SOPHOMORES, 36.

FRESHMEN.

Abell, Donald Roswell; Riley.
 Ackerman, Bernice de Neven; Lawrence.
 Anderson, Ruth Caroline; Lawrence.
 Bair, Roberta May; Lawrence.
 Barry, Olive Jane; Conway Springs.
 Boerstetta, Ruth Brandle; Chanute.
 Browne, Lenora; *Kansas City, Mo.*
 Chase, Shirley Burton; *Kansas City, Mo.*
 Clark, Leila Vivian; Caldwell.
 Crompt, Neva Margaret; Ellis.
 Druley, Cemuth Hazel; Peru.
 Eastlake, Marion; *Kansas City, Mo.*
 Gaddis, Elizabeth R.; McCune.
 Galloway, Olive Eleanor; Lawrence.
 Gaumer, Lucie Virdilla; Lawrence.
 Gillette, Esther; Manhattan.
 Glaze, Helen Jewell; Fort Scott.
 Gleed, Joanna; Topeka.
 Graham, James Evelyn; *Walter, Okla.*
 Hale, Thelma Belle; Yates Center.
 Hilkey, Edna Marie; Lawrence.
 Hinds, Thelma Almeda; Mound Valley.
 Hodgson, Margaret; Downs.
 Hunzicker, Elma Esther; Lawrence.
 Hyre, Mabel Edith; Lawrence.
 Jackman, Laura Susie; Wichita.

Jackman, Ruth; Minneapolis.
 Jackson, Laura Louise; Lecompton.
 Jenks, Helen Dorothy; Ottawa.
 Jordon, Mary Irene; Baldwin.
 Kay, Franc Lisbeth; Clifton.
 Kolasny, Charles S.; Goodland.
 Mackie, Elizabeth C.; Lawrence.
 Maddox, Beatrice Mildred; Coffeyville.
 McBride, Rhea; Onaga.
 O'Brien, Elizabeth Delmarr; Lawrence.
 Pinnick, Marie Elma; Fowler.
 Plump, Luella; Topeka.
 Pouliot, Adrian St. Laurent; Damar.
 Pounds, Mildred; *Joplin, Mo.*
 Rutledge, Helen Roseannah; Topeka.
 Ryan, Mary Ellen; Lincoln.
 Sawyer, Eva Marie; *Westbow, Mo.*
 Scheurer, Clara Henrietta; Lawrence.
 Scott, Faye; Madison.
 Scruton, Charlotte; *Arkansas City.*
 Seelye, Marion Eleanor; Abilene.
 Shafer, Josephine; Lawrence.
 Shore, Alma Elizabeth; *Kansas City.*
 Sutterlin, Pearl Estella; Alta Vista.
 Wyckoff, Ethel Doris; Leavenworth.

FRESHMEN, 51.

SPECIALS.

- *Anderson, Tyson Virgil; Partridge.
 Apple, Gladys Myrtle; Lawrence.
 *Auld, Thelma Elizabeth; Lawrence.
 Bacon, Mary Louise; Lawrence.
 *Bagley, Harriet Robson; *Melbourne, Iowa*.
 Bailey, LaForce; Lawrence.
 Barber, Mary Katharine; Holton.
 Bell Christina Mae; *Kansas City, Mo*.
 *Blackburn, Glessie D.; Stafford.
 Briggs, Mrs. Edith Morgan; Lawrence.
 Brown, Eugene Jesse; Lawrence.
 *Brown, Karl; Lawrence.
 Brown, Marion Eleanor; Lawrence.
 Carter, Mildred Lewis; Lawrence.
 *Coffelt, Gola William; Blue Mound.
 Cochran, Mabel Annette; Coffeyville.
 *Cook, Hazel Myrl; Lawrence.
 *Cole, Mrs. Dorothy Walker; Lawrence.
 Courtney, Mary Edith; Lawrence.
 Coyne, Kathryn Louise; Lawrence.
 Cross, Cecile Irene; Downs.
 Derby, Grace Rosalie; Lawrence.
 *Diveley, Rhea Mae; Hutchinson.
 Duncan, Elizabeth; Lawrence.
 Ellis, Flora Ruth; Lawrence.
 Evertson, Letha A.; Melvern.
 Ford, Creola Olive; *Excelsior Springs, Mo*.
 Galloway, MaBelle Irene; Lawrence.
 Garratt, Kathryn; Eudora.
 *Gimple, Goldie Mirande; Mankato.
 Gleason, Helen Lucile; Wellington.
 *Gould, Lora Emmaline; Wilroads.
 *Govier, Helen Elizabeth; *Kansas City, Mo*.
 *Gregg, Minnie Mae; McCune.
 *Grossenbacher, Margaret; Bern.
 *Haines, Jean Rathburn; Galena.
 *Hale, Robert Kenneth; Eureka.
 *Haworth, Margaret Josephine; Lawrence.
 Heim, Marie Louise; Kansas City.
 Helmick, Dora; Lawrence.
 *Henry, Gladys Margaret; Lawrence.
 Holmes, Orlo Sylvester; Coldwater.
 *Hill, Aeo; Neodesha.
 *Holmes, Opal Aileen; Lawrence.
 *Hunter, Geneva Campbell; Lawrence.
 Kester, Mrs. Frederick E.; Lawrence.
 *Kidwell, Marjory Jessie; Lawrence.
 *Kohman, Frances Miriam; Dillon.
 *Kreitzer, Rose May; Humboldt.
 *Lacy, Blanche Mary; Lawrence.
 La Mere, Francis; *Winnebago, Neb*.
 *Law, Marcellus Seaton; Lawrence.
 Leon, Ruby Myrtle; Lawrence.
 Logan, Louise Katherine; Quenemo.
 *Longstreth, Guy Vernon; Colony.
 Lovejoy, Mrs. Owen H.; Lawrence.
 Lucas, Minnie M.; Lawrence.
 Lyon, Ida Dyer; *Kansas City, Mo*.
 *Lynn, Laureine Esther; Mankato.
 *MacNaughton, Mabel Gertrude; Tonganoxie.
 *Marshall, Charles H.; Glasco.
 *Marshall, Vivian; Leon.
 Martin, Peonie Lindsay; Lawrence.
 Martindale, Jessie Ellen; Lawrence.
 *Mason, Lorinda; Lawrence.
 *Matthews, Violet Eugenia; Topeka.
 *Meek, Van Efton; Turon.
 Merrill, Emma E.; Lawrence.
 Merrill, Nellie B.; Lawrence.
 Miller Wilma Ruth; Lawrence.
 Mills, Edith Parrett; Lawrence.
 Moershall, Mrs. Cora Belle; Lawrence.
 *Moore, Esther; Hutchinson.
 Morgan, Alice; Coffeyville.
 *McBride, Nita; Onaga.
 *McGinnis, Adah Aletha; El Dorado.
 *McHale, Geraldine; Kansas City.
 McKean, Mrs. Vella May; Lawrence.
 McKeever, Harold James; Lawrence.
 *Neal, Ruth Elizabeth; *Cleveland, Okla*.
 *Needham, Dolly; Lane.
 Nungesser, Ella; Lawrence.
 *Oberhilman, Elvina Marie; Leonardville.
 *Ocker, Edna Cecile; McLouth.
 Poland, Etta Sawtelle; Junction City.
 Porterfield, Anna Savage; Lawrence.
 Protch, Rhea Genevieve; Lawrence.
 *Robinson, Cecelia Margaret; Potter.
 *Robinson, Eva; Minneapolis.
 Robinson, Mrs. Ruth Helmick; Lawrence.
 Rudolph, Mrs. Rose Viola; Lawrence.
 *Schaible, Ethel Fern; Fairview.
 Smith, Alta Madaline; Lawrence.
 *Smith, Jess Herbert; Chanute.
 *Smith, Mary Ellen; Pleasanton.
 *Smith, Mrs. Wint; Formoso.
 *Stacey, Frank Baker; Leavenworth.
 *Stauffer, Mina Elsie; Randall.
 Steeler, Mrs. Elsie Wicks; Lawrence.
 *Stewart, Leah Georgie; *De Soto, Mo*.
 Stimpson, Josephine Frances; Lawrence.
 Stouffer, Mrs. Anna L.; Lawrence.
 Strong, Mary Evelyn; Lawrence.
 Taylor, Alberta; De Soto.
 *Tucker, Dorothy; Lawrence.
 *Walker, Carl L.; Lawrence.
 *West, Winifred M.; Kinsley.
 *White, Meldon Ludy; *Kansas City, Mo*.
 *Wulf, Martha Anna; Humboldt.
 *Yates, Margaret Josephine; Merriam.

SPECIALS, 110.

*Enrolled in another school of the University.

SCHOOL OF LAW.

SENIORS.

Barteldes, Armin George; Lawrence.
 Brewer, Lucius Holsey; Lawrence.
 Crowley, William Joseph; Kansas City.
 Embry, Cecil Porter; Wichita.
 Fink, Floyd Melvin; Downs.
 Fogarty, John Lee; Lawrence.
 Fratcher, Frank A.; *Kansas City, Mo.*
 Frost, Austin, Lakin.
 Gates, Miles Walker; Rosedale.
 Gelvin, Clyde Richardson; Pratt.
 Guy, Francis Arthur; Wakefield.
 Hake, Wallace Otto; Minneapolis.
 Hamilton, Roy L.; Beloit.
 Hargett, Jay Earl; Lawrence.

Harrison, William David; Hutchinson.
 Havekors, Walter Benedict; Hanover.
 Hershberger, Arthur Wayne; Greensburg.
 Hoffmann, Harry William; Lawrence.
 Jones, Wilbur Harold; Wichita.
 Norton, James Gerald; Newton.
 Parker, Jabez Sherman; Hill City.
 Randolph, Clarence Albert; Lawrence.
 Rice, Carl; Parsons.
 Shinn, Earl Whittier; Burns.
 Smith, Elwin Leslie; Colony.
 Smith, Errett Garrison; Delphos.

SENIORS, 26.

MIDDLES.

Brown, Benjamin Harris; Lawrence.
 Butler, Carl Balfour; Manhattan.
 Douglas, Arthur Lloyd; Crestline.
 Glasco, Willard Martin; Lawrence.
 Gorsuch, Cecil Otis; Sharon Springs.
 Hook, Enos Edward; Wichita.
 Howland, Herbert; Ludell.
 Hyer, Albert Edward; Olathe.
 Johnson, Morris; Saina.
 Jones, Claude Leonadis; Kansas City.
 Knight, Nathaniel Passmore; Lawrence.
 Krugg, Consuelo Virginia; Coffeyville.
 Krumbach, John Allan; Lawrence.
 Lobaugh, Farel Roy; Washington.
 Murphy, John Damian; Perth.
 Noll, Karl; Ransom.

Pringle, James Thomas; Alma.
 Randolph, John Peyton; *St. Joseph, Mo.*
 Rose, Robert Bell; Rosedale.
 Salvesen, Floyd Wilson; Lawrence.
 Sawyer, Donald Lewis; Lawrence.
 Schell, Oliver W.; Lawrence.
 Shearer, Martin Pierce; Junction City.
 Sneed, Vernon Hobart; Haviland.
 Taylor, Stanley Clyde; Augusta.
 Towers, William Henry; Kansas City.
 Tucker, LeVerne; Cawker City.
 Walsh, Charles Albert; Beloit.
 Wedell, Hugo Theodore; Lawrence.
 Wertz, William Jennings; Wichita.
 Zoellner, Walter Frank; Tonganoxie.

MIDDLES, 31.

JUNIORS.

Adams, Mark Hannah; Liberal.
 Arnold, Marion E.; Emporia.
 Axel, Leon Aaron; *Joplin, Mo.*
 Bierer, Bion Burton; Hiawatha.
 Branine, Aldeh Ezra; Newton.
 Browne, Evan H.; Kansas City.
 Campbell, Carl Benton; Iola.
 Casey, Joseph D.; Norton.
 Clark, John Willis; *Stella, Neb.*
 Davison, William McKinley; St. John.
 Dixon, Will Gill; Leon.
 Evans, Carlos William; Tonganoxie.
 Flynn, John Joseph; Parsons.
 Goodwin, Harold Wilford; Woodston.
 Graham, Hilton Wescott; Hiawatha.
 Granoft, Abraham Jacob; *Kansas City, Mo.*
 Grimes, Clarence Earl; Minneapolis.
 Haines, Howard Wright; Baxter Springs.
 Hardman, Dwight Harrison; Downs.
 Hill, Clair Elwood; Washington.
 Holland, Benjamin Leroy; Lawrence.

House, Harold Merwin; Douglass.
 Idol, Milward; Robinson.
 Jensen, Bernard Francis; Emporia.
 Joslin, Robert William; Hugoton.
 Keeven, John Patrick; Wathena.
 Melvin, George Kimball; Lawrence.
 Milner, John M.; Kansas City.
 Monteith, John Nelson; *Kansas City, Mo.*
 McMahon, George E.; Anthony.
 Parnham, Joseph Clark; *Kansas City, Mo.*
 Rich, Horace Hakeo; Coldwater.
 Ritter, Cecil Henry; Clifton.
 Shaw, Frederick Maurice; Holton.
 Sherwood, William Jesse; *St. Joseph, Mo.*
 Simon, Loren Dale; Seneca.
 Spencer, Harold Hughes; Pittsburg.
 Stephens, Russell Lee; Bethel.
 Wild, George Rader; *Kansas City, Mo.*
 Woodward, Victor D.; Delphos.

JUNIORS, 40.

SPECIALS.

Armstrong, Alfred Glen; Cherryvale.
 *Cowgill, Elvyn S.; Lawrence.
 *Friend, Russell D.; Lawrence.
 *Galle, James; McPherson.
 *Gorrill, Clarence; Lawrence.
 *Gregory, Dwight; Alton.
 Jackson, Chiles Coyle; Coldwater.
 *Metcalf, Ralph; *Kansas City, Mo.*

McElroy, John Willis; Harper.
 *Richter, Theodore; Henry; Alma.
 *Robertson, Robert L.; Lawrence.
 *Robinson, Harry L.; Salina.
 *Tarrant, Thomas O.; Florence.
 *Wilson, William Henry; Lawrence.
 *Young, Donald P.; Dodge City.

SPECIALS, 15.

*Enrolled in another school of the University.

SCHOOL OF PHARMACY.

SENIORS.

FOUR-YEAR COURSE.

Johnson, Emsley Thomas; Lawrence.
 *Day, Harry E.; Canton.

THREE-YEAR COURSE.

Dieffenbacher, Clyde Charles; Cheney.
 Frevele, Earl Lorenz; Moundridge.
 Harrison, George Washington; Lawrence.

TWO-YEAR COURSE.

Allen, Olive Grace; Sedgwick.
 McColloch, Clark William; Lawrence.
 Nelson, Walter Norvel; Lawrence.
 Schroers, Edgar Charles; *St. Joseph, Mo.*
 Smith, Otis Dale; Seneca.
 Spradlin, Clinton Bernard; Garnett.

SENIORS, 11.

JUNIORS.

FOUR-YEAR COURSE.

Howard, Roscoe David; Peck.
 Skaer, Howard Arthur; Augusta.

TWO-YEAR COURSE.

Boyd, Eva Lorine; White City.
 Charles, Russell; Attica.
 Daniels, Emery; Stafford.
 Janeway, Malcolm Everett; Haddam.
 Laurence, George W.; Tonganoxie.
 Lynn, Laurine Esther; Mankato.
 Mosier, Harry David; Hoxie.
 Snodgrass, Clyde Trail; *El Dorado Springs, Mo.*
 Wilcox, Roy Albert; Cottonwood Falls.

JUNIORS, 11.

SOPHOMORES.

FOUR-YEAR COURSE.

McCurry, Frank Wright; Peru.
 Patty, Frank Arthur; Lawrence.

THREE-YEAR COURSE.

Burton, Gladys; Abilene.
 Greenwood, Ralph Howard; Hill City.
 James, Alvah William; Jewell.
 Miner, Lyle Merlin; Burlingame.
 Pickerill, Earl Ray; Lawrence.
 Thompson, Homer; Wichita.
 Tyner, Orice Everette; Dighton.

SOPHOMORES, 9.

FRESHMEN.

FOUR-YEAR COURSE.

Eyerly, Hubert; Nortonville.
 Rinehart, William Galeard; Lawrence.

Seelye, Helen Ruth; Abilene.

FRESHMEN, 3.

SPECIALS.

Auld, Thelma Elizabeth; Kansas City.
 Blanco, Simon; Lawrence.
 Braman, Ellis J.; Manhattan.
 Irvine, Joseph Louis; White Cloud.
 Knox, William Emery; Erie.

Limbocker, Thomas Benton; Erie.
 Meyer, Eugene Nicholas; Leavenworth.
 Murphy, Bryan; Leavenworth.

SPECIALS, 8.

*Enrolled in another school of the University.

SCHOOL OF MEDICINE.

SENIORS.

Belknap, Paul Edward; Atlanta.
 Bresette, Louis Lafe; Topeka.
 Campbell, Fred Bennett; Esbon.
 Chapman, James Walter; *Shelbina, Mo.*
 Culter, Robert Clyde; *Kansas City, Mo.*
 Ewald, Paul Peter; Lawrence.
 Gloyne, Louis Boucher; *Kansas City.*
 Hazzard, Lawrence Rosseau; *Wichita.*
 Henderson, Harry Edwin; *Eskridge.*
 Howden, Thomas Lawrence; *St. Joseph, Mo.*

Janes, William Earl; Merriam.
 Miner, Oliver William; Sublette.
 Oechsli, Waldo Raymond; Lawrence.
 Owens, Hugh Henry; Chanute.
 Rose, Charles William; Floral.
 Vieregg, Frank Ray; *Kansas City, Mo.*
 Whitney, Elmer Lemuel; Talmage.

SENIORS, 17.

JUNIORS.

Albaugh, Houghton Samuel; Topeka.
 Burkhead, Carl Roscoe; Centerville.
 Colt, James Dennison; Manhattan.
 Daniel, Harvey Oscar; Rosedale.
 Dyche, Lewis Lindsay; Lawrence.
 Engel, Lawrence Power; Lawrence.
 Fuller, Clinton Charles; Peabody.
 Grayson, Roy David; Oskaloosa.
 Green, Stanley L.; *Independence, Mo.*
 Hepler, Russell Calvin; Cottonwood Falls.
 Hill, Lee Verne; Osborne.
 Klepinger, Dayton Parker; Rosedale.

Mella, Sherwin E.; Leavenworth.
 Nelson, Charles Sumner; Westphalia.
 Nelson, Lawrence Strong; Iola.
 Neptune, Harold Everette; Salina.
 Nodurft, Elmer J.; Cherryvale.
 Stofer, Dar Delos; Leavenworth.
 Sellers, Lyle Michael; Leavenworth.
 Tait, John Henry; *Kansas City, Mo.*
 Uhls, Kenneth Benton; Overland Park.

JUNIORS, 21.

SOPHOMORES.

Burke, Esther Margaret; Lawrence.
 *Calene, John Lucian; Sylvan Grove.
 *Cazier, Lawrence Wallace; Wakarusa.
 *Champlin, Paul B.; Canton.
 *Church, Harry Lester; Pittsburg.
 *Cole, Warren Henry; Clay Center.
 Downs, Cora M.; Lawrence.
 Furgason, Earl Ruben; Garnett.
 *Gray, Helen Emily; Paxico.
 *Hadley, Ernest Elvin; Alton.
 *Hart, Pattie; Grenola.
 *Hendrickson, Floyd Chester; Lawrence.
 *Hertzler, Agnes Hancock; Halstead.
 *Kehl, Charles Cyrus; Newton.
 Kirkpatrick, Milton Elder; Manhattan.
 Lohrentz, Abraham M.; Moundridge.
 Marquis, George; Lawrence.
 Mowery, Glenn Edsel; Scott City.
 *Myers, Burton Allen; Lawrence.
 Ogg, Francis Willard; Lawrence.

Pace, John David; Lawrence.
 *Patrick, Ruth; Randall.
 Petterson, Edward Chester; Beloit.
 Robinson, Roscoe John; Tescott.
 *Rubie, Mirl Calvin; Parsons.
 Schenck, Fred Gerald; Burlingame.
 Stephens, Brooks Palmer; *Kansas City.*
 *Stivison, Roy Elliot; Lyndon.
 *Sullivan, Bradley; Langdon.
 Tate, William; Lawrence.
 *Thiele, George H.; Washington.
 Tucker, Marcus Othello; Hutchinson.
 Veatch, Harry John; Weir.
 Walter, Edmund Kurt; Lawrence.
 Welker, Joseph Edward; Lawrence.
 *Weltmer, Wardie; Smith Center.
 Wolfe, James Edwin; Wichita.
 Young, Clark Edgar; Sterling.

SOPHOMORES, 38.

FRESHMEN.

Anderson, Forrest Nelson; Lawrence.
 *Beal, Homer; Topeka.
 *Bennie, Herbert S.; Almena.
 Beyer, Martin Ralph; McPherson.
 Bixby, Benjamin Parker; McPherson.
 *Blasdel, Harry E.; Hutchinson.
 *Blount, Justin A.; Larned.
 *Bromell, George Daniel; *Kansas City.*
 *Chambers, Adelbert R.; Tescott.
 *Clark, William D.; Utica.
 *Conklin, Tracey R.; Abilene.
 *Cooper, Dewey H.; Lawrence.
 Cowles, George Edwin; Wichita.
 *Cox, Wilfred; Sharon Springs.
 Curry, Lewis Allison; Dunavant.
 *Dennis, Foster Leonard; Stockton.
 *Dixon, Claud Frank; Kiowa.
 *Drury, Roy C.; Newton.

*Dyer, John Albert; *Kansas City.*
 *Eitzen, A. C.; Hillsboro.
 Ellis, Frank; Iola.
 Elrick, Leroy; Wichita.
 *Emerson, Ralph Waldo; Osborne.
 *Gestring, Hugh Arthur; Lawrence.
 *Good, Donald Cameron; Hiawatha.
 *Haddox, Charlie; Lawrence.
 Hakan, Albert Joel; Lawrence.
 *Hawes, Ralph Edward; Wakefield.
 *Hereford, Melvin; Marion.
 *Hershey, Lynn N.; Abilene.
 *Hoch, Frank Michael; Wilson.
 *Hoover, John Rodric Chase; Haddam.
 *Hoover, Raymond Kenneth; Haddam.
 *Hurwitz, Samuel; Lawrence.
 *Hutton, Jack Gossett; Abilene.
 *Isenberger, Robert Murray; Natoma.

*Enrolled in another school of the University.

FRESHMEN—continued.

*Kerr, Raymond Merrill; Salina.
 *Krouse, Rollo; Wheaton.
 Little, Clarence Henry; Langden.
 *Lutz, Elizabeth Jane; Holton.
 Mahone, Loniel Atticus; *Anniston, Ala.*
 *Martin, Willfred Everett; Lawrence.
 *Morgan, Louis Schubert; Arkansas City.
 *McCandless, Orville C.; Lawrence.
 *McEwen, Fred John; Iola.
 *McNalley, Joseph E.; Michigan Valley.
 *Owens, Guy Ebenezer; Topeka.
 Patton, Edwin Fritz; Lawrence.
 Paul, Olin; Girard.
 *Pinkston, Paul Edwin; Independence.
 Powell, Paul Mahlon; Kansas City.
 *Rannie, Paul Rumel; Lawrence.
 *Reynolds, John M.; Independence.
 Robbins, Martin V.; Kansas City.

Ross, Gilson C.; Delphos.
 Sandidge, Allen Wilson; Mulberry.
 Schoier, Charles Otto; *Albion, Wash.*
 Scholer, Henry Charles; Bonner Springs.
 *Scott, James M.; Mankato.
 *Shelley, Harold John; Elmdale.
 *Soper, Gail Raney; Hutchinson.
 *Stephenson, Walter; Luray.
 *Stevens, Roy U.; Lawrence.
 *Terrill, Harold James; Robinson.
 *Thiessen, Edward; Beloit.
 *Van Vliet, Julius Patterson; Manhattan.
 *Walz, Thomas Julius; Kansas City.
 *Wilbur, Clifford Henry; Lawrence.
 *Wilson, Fernando Ivan; Lawrence.

FRESHMEN, 69.

SPECIALS.

Pratt, Hazel Helen; Lawrence.

SPECIALS, 1.

TRAINING SCHOOL FOR NURSES.

Alexander, Leah; Mayfield.
 Craven, Fannie Ellen; Summerfield.
 Ehrman, Ada Millicent; Ottawa.
 Fowler, Roxie Ann; *Unionville, Mo.*
 Glauser, Antoinette Bertha; *Chestnutridge, Mo.*
 Gragg, Jessie Hazel; Arkansas City.
 Hall, Mabel Fern; Scammon.
 Halverstadt, Frances Lucile; Oxford.
 Hutchison, Nova Thomas; *Harris, Mo.*
 Kessler, Dora; Hutchinson.
 Ken, Maud Madeline; *Long Beach, Cal.*
 Mauson, Alyce Isabel; McCune.
 Montee, Emma Lelia; Cherokee.

Miller, Luella; Norcatur.
 Mitts, Augusta Jane; Columbus.
 McCort, Jessie; Wellington.
 McDaniel, Helen Anabel; Columbus.
 McKee, Mary Edith; Caney.
 Tarr, Grace; Summerfield.
 Turner, Jo Ola; Independence.
 Vaughn, Ruth Vivian; Caldwell.
 Weber, Hilda; Mayfield.
 Whitmore, Wilma Elsie; Manhattan.
 Zwick, Alice May; Lawrence.

NURSES, 24.

 *Enrolled in another school of the University.

SCHOOL OF EDUCATION.

GRADUATES.

*Amos, Thyrsa Wealtha; *Shawnee, Okla.*
 *Blair, John Alvin; Lawrence.
 *Cook, Ruby Vergil; Mulberry.
 *Gregory, Wheeler Russell; *Kansas City, Mo.*
 *Jaggard, Guy Hathaway; Lawrence.
 *Marm, Anna; Lindsborg.
 *Schenk, Mary Lillian; Neosho Rapids.

*Sellers, James Lee; Lawrence.
 *Spangler, Irma Bauman; Lawrence.
 *Vogt, Alice Nadene; *Versailles, Mo.*
 *White, Lilla May; Baldwin City.

GRADUATES, 11.

SENIORS.

*Abel, Clara Mildred; Lawrence.
 *Adams, Frances Elizabeth; Lawrence.
 *Anderson, Gladys Camilla May; Lawrence.
 *Anderson, Eva-Bell; Lawrence.
 *Arnold, George Brandt; Newton.
 *Bean, Marjorie Lillian; Lawrence.
 *Beebe, Georgia Alice; Burns.
 *Beverstock, Ruth Lenore; Lawrence.
 *Bingham, Sarah Bernice; Wichita.
 *Blurton, Nell Florence; Bucklin.
 *Booher, Florence May; Lawrence.
 *Brady, Agnes Marie; Lawrence.
 *Brauer, Alfred Charles; Newton.
 *Brown, Joyce Adine; Olathe.
 *Brownlee, Mary Angelina; Stafford.
 *Bryan, Jennie Maude; Waterville.
 *Buchanan, Marie Estella; Lawrence.
 *Bumann, Alice; Lawrence.
 *Bunger, Frances May; Alta Vista.
 *Burgert, Eran Omer; Lawrence.
 *Carnie, Kathleen; *Kansas City, Mo.*
 *Carson, Hazel Ellene; Ashland.
 *Cole, Dorothy Walker; Lawrence.
 *Coons, Glenn Claypool; Lawrence.
 *Cooper, Rebekah Blackwood; Wichita.
 *Corel, Gladys Fay; Lawrence.
 *Cory, Frances Eugenia; Lawrence.
 *Daniell, Lola Lee; Lawrence.
 *Daum, Frieda; Lawrence.
 *Deibel, Maria; Lawrence.
 *Dolecek, Edna Helen; Lawrence.
 *Dring, Lovilla Ruth; Lawrence.
 *Endacott, Ruth Beatrice; Lawrence.
 *Fogarty, Katherine; Lawrence.
 *Forsythe, Anna Elizabeth; Edgerton.
 *Fox, Helen June; Lawrence.
 *Friedberg, Fay Sarah; Topeka.
 *Fuger, Golda Margaret; Wathena.
 *Fuller, Ilde Wilson; Lawrence.
 *Garman, Helen Rose; Lawrence.
 *Gaskill, Gussie Esther; Lawrence.
 *Giger, Harold Henry; Elmdale.
 *Griffith, Marion Elizabeth; Kansas City.
 *Hackerott, Agnes Marie; Osborne.
 *Hadley, James Wilbur; Coldwater.
 *Hangen, Eva Catherine; Wellington.
 *Harris, Polly Smith; Lawrence.
 *Harter, Gladys; Douglass.
 *Hawkins, Ulista Alice; *Jasper, Mo.*
 *Helmer, Sophia Bertha; Fort Scott.
 *Henrickson, Ethel E.; Lawrence.
 *Hurley, Gertrude Ellen; Lawrence.
 *Husson, Margaret Sabina; Kansas City.
 *Jobes, Frances Mildred; Mission Hills.
 *Johnson, Anna Mary; Kingman.
 *Johnson, Frederica Angela; Blue Rapids.
 *Johnson, Howard Henry; Garnett.
 *Joseph, Frances Marion; Whitewater.
 *Katterjohn, Daniel Louis; Enterprise.
 *Kreeck, Charlotte Eloise; Lawrence.
 *Kubik, Clara Mary; Caldwell.
 *Kubik, Emily Clementis; Caldwell.
 *LaCoss, Gertrude Martha; Lawrence.
 *Lebengood, Nelle; Paola.
 *Levi, Laura May; Olathe.

*McHenry, Lloyd Alfred; Baldwin.
 *McKinney, Helen Julia; Iola.
 *Mannix, Winnifred; Overbrook.
 *Martin, Lillian Mae; Topeka.
 *Mason, Lorinda; Lawrence.
 *Means, Lucile Ingels; Hiawatha.
 *Metcalf, Ralph Hedges; *Kansas City, Mo.*
 *Miller, Stella Vanera; Lawrence.
 *Morgan, Howard Charles; Haviland.
 *Mussion, Edith; *Norborne, Mo.*
 *Nicholson, Mary Morse; Newton.
 *Nowlin, Lucile; Lawrence.
 *Palmer, Gertrude Octavia; Lawrence.
 *Pedroja, Mary M.; Lawrence.
 *Phenicie, Edith Anne; Tonganoxie.
 *Porterfield, Lois Myrtle; Holton.
 *Potter, Clarence Earl; Girard.
 *Querfeld, Dorothy Jessie; Lawrence.
 *Raymond, Walter Archie; Rago.
 *Reding, Katherine Prue; Lawrence.
 *Reid, Elsie; Norcatr.
 *Rice, Gladys; Lawrence.
 *Rickard, Marjorie Adeline; Lawrence.
 *Rogers, Lena Edith; Wellington.
 *Rose, Mildred Edith; Parsons.
 *Roop, Esther; Abilene.
 *Rush, Ethel May; Lawrence.
 *Russell, Cora Thurza; *Amarillo, Tex.*
 *Schell, Mignon Bernice; Wichita.
 *Schultz, Madeline; Barnes.
 *Schwarz, Josephine Marie; Wilson.
 *Scott, Ethel; Columbus.
 *Selig, Mary Frances; Lawrence.
 *Senhausen, Julian Louise; Leavenworth.
 *Shafer, Annie Neil; Olathe.
 *Sheets, Linnie Vaetta; Lawrence.
 *Shukers, Lucile; Independence.
 *Skinner, Frances Marie; Columbus.
 *Skinner, Hazel; Garden City.
 *Smith, Mary Ellen; Pleasanton.
 *Sopher, Maude Myrtle; Topeka.
 *Spreier, Amy; Pawnee Rock.
 *Stevenson, Harriet Maude; Lawrence.
 *Stevenson, Margaretta Price; Leavenworth.
 *Taylor, Bernita Elgin; Lincoln.
 *Teitzel, Hazel Louise; Wichita.
 *Thomann, Frank Charles; Summerfield.
 *Thomas, Charles Leonard; Humboldt.
 *Thomas, Ruth Laura; Lawrence.
 *Thompson, Theo Ina; Marion.
 *Thompson, Wiley Lane; Lawrence.
 *Topham, Laura; Lawrence.
 *Totten, Orpha M.; Beattie.
 *Trant, Sara; Edwardsville.
 *Tucker, Dorothy; Lawrence.
 *VanArsdale, Mary Evangeline; Lawrence.
 *Voorhees, Myra Bell; Leavenworth.
 *Waters, Jane; Bonner Springs.
 *Watson, Charles Hoyt; Lawrence.
 *Wedd, Helen Frances; Lenexa.
 *Wedell, Emma Caroline; Lawrence.
 *Windsor, Grace; Lawrence.
 *Woodward, Parke Harold; Wichita.
 *Young, Arthur Raymond; Wichita.

SENIORS, 129.

*Enrolled in another school of the University.

JUNIORS.

- *Allen, Louise Clara; La Cygne.
 *Atkinson, Eleanor Frances; Lawrence.
 *Babcock, Wealthy Consuela; Hollenberg.
 *Bagby, Grace; Lawrence.
 *Baldwin Katrina; *Kansas City, Mo.*
 *Bales, Elsie Ruth; Lawrence.
 *Batchman, Eva Julane; St. John.
 *Beal, Mary Letitia; Hamilton.
 Bell, Laura Ellen; *Kansas City.*
 *Bell, Laura Elizabeth; White Cloud.
 *Benson, Anne Victoria; *Essex, Conn.*
 *Biresak, Alfrida Florence; *Kansas City, Mo.*
 *Brown, Clara Marie; Lawrence.
 *Buck, Jessie Lucile; Paola.
 *Burnette, Lelah Lucille; Linwood.
 *Burnett, Mary Margaret; Lawrence.
 *Butler, Florence Vale; Lawrence.
 *Campbell, Marjorie Anna; Harper.
 *Canavan, Lila Marguerite; Lawrence.
 *Carnie, Elizabeth Ewing; *Kansas City, Mo.*
 *Carter, Millie Field; Lawrence.
 *Castle, Marjorie; *St. Joseph, Mo.*
 *Chaffee, Myrtle; Marysville.
 *Cissna, Arnstina; *Kansas City.*
 *Clark, Maurine Flowerree; Fredonia.
 *Darby, Raymond V.; Washington.
 *DeWald, Martha; Russell.
 *DeWitt, Helen Wright; *Kansas City.*
 *Dodderidge, Faye; White City.
 *Doyle, Gertrude L.; *Kansas City.*
 *Drake, Gladys Edith; Lawrence.
 *Dunmire, Ruth Camilla; Lawrence.
 *Elliott, Jeannette Harriett; Lawrence.
 *Engle, Viola; Abilene.
 *Fairchild, Margaret; Hiawatha.
 *Firebaugh, Lena; St. John.
 *Fulkerson, Katharine; Lawrence.
 *Furney, Eunice; Alta Vista.
 *Gibson, Winnie Olive; *Arkansas City.*
 *Gidinghagen, Myrtle Roselia; *Kansas City, Mo.*
 *Gilleson, Murray Mack; Burlingame.
 *Gillispie, Imogene Marion; *Kansas City.*
 *Gillock, Frances Eugenia; Fort Scott.
 *Glasco, Maude Eleanor; Lawrence.
 *Gordon, Maybelle Inez; Lawrence.
 *Green, Ethlyn; *St. Joseph, Mo.*
 *Guild, Ruth Evelyn; Topeka.
 *Harkrader, Florence; Pratt.
 *Hart, Helen; Bonner Springs.
 *Hawes, Virginia Anna; *Oak Grove, Mo.*
 *Heathman, Lucy; Lawrence.
 *Hege, Myrtle Marie; Sedgwick.
 *Heter, Georgia; Lawrence.
 *Hildinger, Pauline Virginia; Lawrence.
 *Hilton, Willard Ordway; Cottonwood Falls.
 *Hitchcock, Frances Lee; Augusta.
 *Hoff, Grace Elizabeth; Lawrence.
 *Hohn, Nellie Doris; Marysville.
 *Holmes, Miriam Eva; Elmdale.
 *Hostetler, Ruby Madelyn; Glasco.
 *Hostetter, Marie Miller; Lawrence.
 *Hudson, Marjorie; Fredonia.
 *Huff, Bonnie Mae; Preston.
 *Hypes, Hazel E.; Topeka.
 *Ingham, Florence Mae; Fort Scott.
 *Jackson, Hester King; Lincoln.
 *Johnson, Catharine Rawlings; *Kansas City, Mo.*
 *Kennedy, Leta Fern; Lawrence.
 *Kimball, Pauline; Neodesha.
 *Lamme, Elizabeth Ann; Hiawatha.
 *Leon, Irma Katherine; Lawrence.
 *Lesh, Corinne; *Arkansas City.*
 *Lewis, Mayme Juanita; *Kansas City, Mo.*
 *Lindley, Elizabeth Georgia; Lawrence.
 *Ludeman, Frances Margaret; Anthony.
 *Lutz, Irma Thekla; *Kansas City.*
 *MacNaughton, Mabel Gertrude; Tonganoxie.
 *Maloy, Eva Helena; Eureka.
 *Martin, Helen Marie; *Kansas City.*
 *Martin, Rebecca; Garnett.
 *Montague, Josephine May; Washington.
 *Moore, Esther H.; Hutchinson.
 *McBratney, Edyth Mae; Centralia.
 *McCall, Fanny Virginia; Hiawatha.
 *McCamish, Dorothy Lee; *Kansas City.*
 *McChesney, Meda; Clay Center.
 *McDowell, Carroll; *Arkansas City.*
 *McGrath, Mary Bridge; Waverly.
 *McMillan, Sadie; Lawrence.
 *Nixon, Louise Aldrich; Wichita.
 *Peffer, Helen Hayes; Eureka.
 *Piper, Caroline Hough; Irving.
 *Pittman, Clara Amanda; Liberal.
 *Reed, Ula May; Attica.
 *Richardson, Hermina M.; Lawrence.
 *Robinson, Eva; Minneapolis.
 *Rorabaugh, Evelyn; Wichita.
 *Rouse, Ruth Mary; Wichita.
 *Rudolph, Georgia Ruth; Lawrence.
 *Sandberg, Dorothy May; *Kansas City, Mo.*
 *Scott, James Armstrong; *Kansas City.*
 *Segelbaum, Rose Bertha; *Kansas City.*
 *Smith, Erma Anita; Sharon.
 *Smith, Nellie Virginia; Lawrence.
 *Smith, Ralph Alexander; Garnett.
 *Spencer, Lucene Allen; Iola.
 *Steeckle, Marie; Ellinwood.
 *Stephenson, Carol Dell; Burlington.
 *Sterling, Lucile; Lawrence.
 *Stevenson, Fernie; Lawrence.
 *Strange, Vivian Naomi; Perry.
 *Swanson, Minnie C.; McPherson.
 *Taylor, Lora; Alton.
 *Thomen, Agnes; Junction City.
 *Transue, Elsie Belle; Summerfield.
 *Underwood, Fay; Lawrence.
 *Wagstaff, Helen Elizabeth; Lawrence.
 *Walker, Margaret Louise; Salina.
 *Walling, Lulu Grace; Lawrence.
 *Webb, Ora Louella; Lawrence.
 *Whitcher, Edith Frances; Concordia.
 *Whitehurst, Terrell; *Kansas City.*
 *Winthrop, Psyche Susan; Wichita.
 *Wood, Roberta Virginia; Lawrence.
 *Woods, Ruth Sarah; Burden.
 *Young, Margaret; Fredonia.

JUNIORS, 126.

SPECIALS.

- *Anderson, Ruth Caroline; Lawrence.
 *Auswald, Frances Elizabeth; *Kansas City.*
 *Bair, Ava; Lawrence.
 *Barber, Katharine Mary; Holton.
 *Barry, Olive Jane; Conway Springs.
 *Bozell, Goldie Vivian; Cherryvale.
 *Caffrey, June Helen; Mt. Hope.
 *Constant, Olive Jane; Lawrence.
 *Dolechek, Christine Antonette; Ellsworth.
 *Eastman, Cora Grace; Lawrence.
 *Gaddis, Elizabeth; McCune.
 *Galloway, Olive Eleanor; Lawrence.
 *Garvin, Mabel Mary; MODO.
 *Gillette, Esther; Manhattan.
 *Gorman, Joana Bess; Chapman.
 *Gregg, Helen Corinne; McCune.
 *Grossenbacher, Sophia Elizabeth; Bern.
 *Grossenbacher, Margaret; Bern.
 *Helmer, Selma Velma; Fort Scott.
 *Hunzicker, Elma Esther; Lawrence.
 *Imus, Irene; *St. Joseph, Mo.*
 *Jackson, Helen Elizabeth; *Kansas City.*
 *Kay, Franc Lisbeth; Clifton.
 *Kirwan, Cora Ida; Bendena.
 *Luckan, Charlotte M.; Lawrence.
 *Mellenbruch, Dale F.; *San Juan, Tex.*

*Enrolled in another school of the University.

SPECIALS—*continued.*

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| *McHale, Geraldine; Kansas City. | *Seelye, Marion Eleanor; Abilene. |
| *Nelson, Gladys; Lawrence. | *Smith, Mildred Christie; Waverly. |
| *Nevins, Gertrude Isabel; Blue Rapids. | *Stout, Bessie; Cherryvale. |
| *Nichols, Lois Eva; Pawnee Rock. | *Stout, Grace Marie; Cherryvale. |
| *Novel, Doris Reita; <i>Kansas City, Mo.</i> | *Summers, Myra Cochran; Lawrence. |
| *Orelup, Katherine Elizabeth; Lawrence. | *Sutterlin, Pearl Estella; Alta Vista. |
| Ott, Gertrude; Eudora. | *Talbert, Vesta M.; Conway Springs. |
| *Perkins, Alice Minerva; Howard. | *Uhrich, Frances Dorothy; Kansas City. |
| *Pittinger, Lena Wilhelma; Arkansas City. | *West, Genevieve; Lawrence. |
| *Rice, Alice; Lawrence. | *Windhorst, Emma Henry; Belpre. |
| *Rutledge, Helen Roseannah; Topeka. | *Wyckoff, Ethel Doris; Leavenworth. |
| *Scott, Fay; Madison. | |
| *Scruton, Charlotte; Arkansas City. | |

SPECIALS, 50.

*Enrolled in another school of the University.

SUMMER SESSION, 1917.

- *Aach, Wm. Arthur; Galena.
Chemistry.
- *Abel, Clara Mildred; Lawrence.
Education, Mathematics, Home Economics,
Sociology.
- Adams, Grace E.; Iola.
Music.
- Adee, Joshua Hamilton; *Steele City, Neb.*
Education, Public Speaking, Physical Edu-
cation.
- Allen, Beulah; McPherson.
Latin, French, Education, German.
- *Allen, Frances; Lawrence.
Music.
- *Amos, Thyrsa, Wealtha; Lawrence.
Education, Sociology.
- Anderson, Edna Louise; Partridge.
Sociology, Public Speaking, Physical Educ.
- *Anderson, Eva-Bell; Lawrence.
Education.
- *Anderson, Gladys Camilla M.; Lawrence.
English, Education.
- *Anderson, Ruth Caroline; Lawrence.
Music.
- Anderson, Willard Coe; Partridge.
History, Sociology, Economics.
- Armstrong, Wallace B.; *Kansas City, Mo.*
Physiology.
- Arnett, Wilma; Lawrence.
Education.
- *Arnold, G. Brandt; Newton.
Physiology.
- *Asendorf, Wm. F.; Garden Plain.
Chemistry.
- Ashton, Madeline; Lawrence.
Education.
- Atkinson, Myrtle A.; Leocompton.
Education.
- Atwood, Carrie; Lawrence.
Sociology, English, History.
- *Auswald, Elizabeth Frances; Kansas City.
Chemistry, Zoology.
- Axton, Clayton Arthur; Pleasanton.
Education.
- *Baker, Fressa Sample; Toronto.
Entomology, Sociology.
- *Baker, H. Violet; Topeka.
History, French.
- *Bales, Elsie R.; Lawrence.
English, Public Speaking.
- Barbel, Ulrich John; La Cygne.
Education.
- Barber, Fred H.; Macksville.
Education.
- Barber, Nettie W.; Kirwin.
Education, History.
- Barnes, John R.; Kincaid.
History, Education, Physical Education,
Economics.
- Barnes, Nellie; *Kansas City, Mo.*
Greek, English.
- Barnhill, Gilbert Earl; Liberal.
Medicine.
- *Barter, Leland; Dodge City.
Chemistry, Mathematics.
- Bassett, Mary; Dover.
Chemistry, Physical Education.
- Bates, J. Edward; Prairie View.
Physics, Public Speaking, Entomology.
- Battin, Charles T.; Ottawa.
History, French, Physical Education.
- Baughner, Daniel A.; Kinsley.
Education.
- Baumgartner, W. J.; Lawrence.
Bacteriology.
- Baysinger, Chas. E.; Hartford.
Education, History, Public Speaking.
- *Beal, Homer; Topeka.
Medicine.
- *Beal, Mary Letitia; Hamilton.
Education.
- Beard, Roy J.; *Fort Worth, Tex.*
English, Economics.
- *Bechtel, Isabel Frances; Liberty.
Chemistry.
- Belding, Florence Kent; Pleasanton.
Education.
- Bell, Ada Pearl; Lawrence.
Chemistry.
- *Bell, Myra A.; Leavenworth.
Home Economics, German.
- *Bennie, Herbert Stewart; Alma.
Medicine.
- Benschmidt, Ella; Hutchinson.
Economics, Home Economics.
- *Bernhard, Alice V.; Lawrence.
History.
- *Besse, Harold U.; Weir.
Chemistry.
- *Beverstock, Ruth L.; Lawrence.
English, Home Economics, Sociology.
- Bishop, Daisy Marita; *Kansas City, Mo.*
Zoology, Philosophy.
- Bistline, Viola M.; *Webb City, Mo.*
Sociology, History.
- Black, William Cooper; Stafford.
Education.
- Blackburn, Vera Edith; Larkinsburg.
Education, Latin, Spanish.
- Blair, Grace; Lawrence.
Spanish, Latin.
- *Blair, James S.; Lawrence.
Physics, Chemistry.
- Blair, James William; Topeka.
Journalism, English.
- *Blair, John Alvin; Lawrence.
Botany, History.
- Bocker, Helen Arzelia; Solomon.
Music.
- Borman, Ruth E.; *Mt. Washington, Mo.*
German, Mathematics.
- Bowes, Margaret T.; Lawrence.
Music.
- *Boyd, Arthur Carl; Lawrence.
Physics.
- Braden, Zella Olive; Elsmore.
History, Education.
- Braun, Catherine Lelia; *Owensboro, Ky.*
History, German.
- Breitweiser, C. Ray; Cawker City.
Journalism.
- Brock, Edythe Marie; Nortonville.
Spanish.
- Brock, T. Gertrude; Ottawa.
Education.
- Brown, Alice L.; Lawrence.
Chemistry.
- Brown, Cecil Marian; Lawrence.
Botany, History.
- *Brown, Clara Marie; Lawrence.
Physical Education, French, Zoology.
- *Brown, Joyce E.; Logan.
Chemistry.
- *Brown, Karl; Spearville.
English, Public Speaking.
- *Brown, Marguerite Esther; Lawrence.
Psychology, English, Philosophy.
- Brown, Wm. Fayette; Lawrence.
Education.
- Brunner, Ellen Mildred; Onaga.
Music, Spanish.

* Also in current session.

- *Brush, Harriett E.; Lawrence.
Chemistry.
- Buchanan, Nelle Reece; Lawrence.
Latin, Spanish.
- Burdette, Viola; Winfield.
English, Education.
- Burgert, Chester O.; Lawrence.
Sociology, Public Speaking, Mathematics,
Education.
- *Burgert, Eran O.; Lawrence.
Education, Mathematics.
- Burke, Edmund C.; Lawrence.
Chemistry.
- Burke, Esther Margaret; Lawrence.
Medicine.
- Burns, Odis Herschel; Tulsa.
Law.
- Butler, Mrs. H. L.; Lawrence.
Music.
- Calbeck, John H.; Pratt.
Chemistry.
- Calkins, Anna Lorimer; Willis.
Education.
- Calkins, Delmar Franklin; Willis.
Economics, Education.
- *Campbell, R. F.; Meade.
Chemistry.
- Carlson, David E.; Caldwell.
Law.
- *Carman, J. Neale; Herington.
Economics, Public Speaking.
- *Carnie, Kathleen; *Kansas City, Mo.*
Education, Home Economics.
- Cary, Frances D.; *Hamilton, Mo.*
Education, History.
- Cate, Florence Marilla; Winfield.
Spanish.
- Catlin, Lawrence J.; Olathe.
Physics.
- *Chambers, A. R.; Tescott.
Chemistry.
- *Champlin, Paul B.; Canton.
Medicine.
- Chandler, J. R.; Kincaid.
Medicine, Education.
- Chilcott, Frank; Osborne.
Chemistry.
- Church, Mary L.; Lawrence.
Music.
- Clark, Amy B.; Mankato.
Botany, English, Mathematics.
- Clark, Elizabeth Hallie; *Cherokee, Okla.*
English, Education.
- Clark, Ethel C.; Mankato.
Botany, Sociology, History, Mathematics.
- *Clark, Helen E.; *Kansas City, Mo.*
English, Botany.
- Clark, Mildred; Mankato.
Music, Public Speaking, Botany.
- *Clark, Roy Henry; Lawrence.
Chemistry.
- Clavin, Maud E.; Olathe.
Psychology, English.
- Clawson, M. E.; Concordia.
Chemistry.
- *Clayton, Ross Herbert; Lawrence.
Economics.
- Cloud, Calvin Clyde; Admire.
Zoology, Mathematics, Medicine.
- Coe, Jessie M.; Lawrence.
Education.
- *Coffey, Erval; Lawrence.
Zoology, English.
- *Cole, Dorothy W.; Lawrence.
Journalism, English, Physical Education.
- Cole, Edith; Lawrence.
Home Economics.
- Cole, M. Stella; Lawrence.
History, Entomology.
- Collins, Lloyd M.; Iola.
History, Economics.
- Collins, Olive; Pittsburg.
Education, Latin, Spanish.
- Conner, David Ewing; Chetopa.
German.
- Cook, Julius Edgar; Ness City.
German, Latin, Economics.
- *Cook, Ruby Vergil; Mulberry.
Chemistry, Physics.
- *Coons, C. Glenn; Independence.
Chemistry, History, Botany.
- Cope, John G.; Lawrence.
Law, Economics.
- Corn, Laura E.; Humboldt.
Sociology, Education.
- Corning, Myra M.; Topeka.
History.
- *Cory, Eugenia Frances; Lawrence.
Education, Botany, Home Economics.
- *Cowles, George; Wichita.
Zoology, Chemistry.
- Cox, Sara Evelyn; Protection.
Home Economics, Education.
- *Coyne, Kathryn; Linwood.
Music.
- Crawford, Earl M.; Sedgwick.
Education, Mathematics.
- *Creek, Olive M.; *Kansas City, Mo.*
Music.
- Crick, Gertrude; Pratt.
Education, English.
- *Crim, Adele M.; Lawrence.
Chemistry, Latin, Home Economics.
- Crocker, L. Mabel; Wichita.
Journalism, English.
- Cronk, Seymour H.; Stafford.
Spanish.
- Crosthwait, Anne E.; *Kansas City, Mo.*
Education.
- Crowley, Corinne; Lawrence.
Spanish.
- Cruzan, Evelyn; *Bethany, Mo.*
Education.
- *Cunningham, R. Brown; Caney.
History, English.
- *Curry, Lewis A.; Dunavant.
Chemistry.
- Curry, Madeline; *Kansas City, Mo.*
Home Economics, Philosophy.
- Czapanskiy, Lucy A.; Aurora.
Public Speaking, French.
- Dahlene, Mildred M.; Lawrence.
Education.
- Dahlene, Oscar; Lawrence.
Education, Mathematics.
- *Daniell, Lola Lee; Lawrence.
English, Education.
- Davenport, Cora L.; McPherson.
Sociology, Education, Music,
Physical Education.
- Davis, Kenneth Albert; Morganville.
Education, English Philosophy.
- Day, Cameron Donald; Lawrence.
Medicine.
- DeArmond, Mrs. Frank V.; Parsons.
Education, Zoology, Philosophy.
- *Deibel, Maria; Lawrence.
Education, Spanish, German.
- Deibert, Olin; Lawrence.
Bacteriology.
- Deitz, Wm. P.; Overland.
Psychology, Education.
- de Mare, Adeline; Lawrence.
Journalism, Education, German.
- *Dennis, Foster L.; Stockton.
Medicine.
- Devlin, John A.; Fort Scott.
Education.
- Devlin, May M.; Fort Scott.
Sociology, French.
- *DeWitt, Helen W.; Kansas City.
Education, Home Economics.

* Also in current session.

- Dickerman, Daisy H.; Oswego.
Education, Latin.
- Dickerson, Jennie E.; Peabody.
Education.
- *Dolecek, Edna Helen; Lawrence.
Education, Home Economics.
- Dorcas, Merritt J.; Baldwin.
Chemistry.
- Dotzour, Grover C.; McPherson.
Education, Sociology.
- Dougherty, Ethel D.; Logan.
German, Education.
- Douthitt, Cecil; *Sulphur, Okla.*
Zoology, Physical Education.
- *Dring, Louilla Ruth; Lawrence.
Public Speaking, English.
- *Drury, Ray C.; Newton.
Chemistry, Zoology.
- DuBois, Florence; Wichita.
German, Education.
- Dunakin, Gladys; Lawrence.
Music.
- Dunbar, Eva; Oberlin.
Education, Philosophy.
- Dunigan, Florence Esther; Lawrence.
Sociology, Public Speaking, Home Economics, Education.
- Dunn, Corinne E.; Ottawa.
Music.
- *Dyer, John A.; Kansas City.
Physics.
- Easley, Anna B.; Elk City.
English, History.
- Eaton, Ellen Jane; Highland.
Psychology, Education.
- Eberhart, Hazel; Lawrence.
Music.
- *Edmonson, Ellen; Newton.
Entomology.
- Ege, Harriet; Lawrence.
Home Economics.
- Eggleston, Edward Earl; McLouth.
Botany, History, English.
- Elcock, Chas.; Conway Springs.
English.
- Elem, Edythe Mary; Sylvia.
History, Home Economics.
- Elem, Leila-Belle; Sylvia.
History, Home Economics.
- Ellenberger, Rush W.; Bazine.
Education, Economics.
- Elliott, E. Arthur; Lawrence.
Education.
- *Ellis, Ruth; Lawrence.
Drawing.
- Emerson, Hattie L.; Chanute.
Music.
- *Endacott, Ruth B.; Lawrence.
Physiology, Education.
- Engel, Agnes; Lawrence.
Music, Spanish.
- Estes, Emmet F.; *Liberty, Mo.*
Bacteriology.
- Evans, Fern; Lawrence.
Psychology, English.
- Evans, Lester J.; *Clovis, New Mexico.*
Physics.
- *Fackler, Harry Lee; Lawrence.
Entomology.
- Faidley, Jennie; Broughton.
Sociology, History, English.
- Fairchild, Chas. Clement; Valley Falls.
Education.
- Farling, Anna E.; Cherryvale.
Economics, English, Philosophy.
- Feierabend, Frank L.; Atchison.
Physics.
- *Ferg, Gertrude; Girard.
Zoology, Botany.
- Ferguson, Samuel Henry; Atchison.
Physics.
- Ferris, Alice; Osage City.
Music.
- *Ferris, Emily H.; Lawrence.
Botany, Journalism, Sociology, Zoology.
- Fish, Lillian V.; Lawrence.
Sociology, Public Speaking.
- Fisk, Harry Clay; Lawrence.
Education.
- *Fitch, E. Margaret; Lawrence.
Music.
- Fitch, Laura M.; Minneapolis.
Education, Physical Education.
- Fitch, Ruth M.; Minneapolis.
Botany, Music, Physical Education.
- Flynn, S. Matthew; Lawrence.
Music.
- *Ford, Creola; *Excelsior Springs, Mo.*
Music.
- *Forsythe, Anna E.; Edgerton.
Education, Home Economics.
- Frantz, Lillian; Wichita.
English, Sociology.
- *Frazier, Irma G.; Lawrence.
Botany, History.
- Freark, Sarah W.; Lawrence.
History, Sociology.
- Freeman, Edna Mary; El Dorado.
English, Physical Education, Music.
- Frye, Ora; Lincoln.
Education, History.
- *Fulkerson, Katherine; Lawrence.
Public Speaking, Education.
- Fuller, Avis L.; Salina.
Sociology, English.
- *Fuller, Ilde; Lawrence.
Spanish.
- Gard, Blanche A.; Iola.
English, Education, Sociology.
- *Gardiner, Ruth B.; Fredonia.
History.
- *Gardner, Mabelle P.; Neosho Falls.
Drawing.
- Garrett, Maud L.; Lawrence.
Physiology, Botany.
- Gault, Cora Hazel; Wellington.
Spanish.
- Gay, Katie B.; Stafford.
Physics, Botany, Philosophy.
- Geiger, Addie; Ottawa.
Botany, Education.
- *Gestring, Hugh A.; Lawrence.
Chemistry, Medicine.
- Gibson, Ruth A.; *Kansas City, Mo.*
Music.
- *Gibson, Ruth Muriel; Arrington.
Botany, English, Sociology, Economics.
- Gidinghagen, Walter; *Kansas City, Mo.*
Sociology.
- *Gilkeson, Murray M.; Burlingame.
Education, French, Sociology.
- *Gilkeson, Raymond H.; Burlingame.
Zoology, English.
- Gilkey, Harry M.; Richmond.
Medicine.
- *Gillette, Esther Julia; Lawrence.
Music, English, Philosophy.
- Gillock, Pearl; Fort Scott.
Education, Journalism.
- *Glasco, Maude; Lawrence.
Chemistry, Botany, Home Economics.
- Goldsmith, Goldwin; Lawrence.
Botany.
- *Good, Donald C.; Hiawatha.
Physics, Medicine.
- *Gorman, Joan Bess; Chapman.
Psychology, Music.
- *Gossard, Mary E.; Oswego.
Music.
- *Gould, Edythe; Irving.
Journalism.

* Also in current session.

- *Graeber, Arling; Lawrence.
Chemistry, Philosophy.
- *Gray, Helen E.; Paxico.
Medicine.
- Green, Edna Faye; Coffeyville.
Latin, Education, English.
- Green Stanley T.; *Independence, Mo.*
Medicine.
- Gregory, Marguerite; Lawrence.
Education, Botany.
- *Gregory, W. R.; *Kansas City, Mo.*
Bacteriology, Education.
- *Greider, Harold W.; Topeka.
Chemistry.
- *Griffith, Marion E.; Lawrence.
Economics, History, Sociology.
- Gruver, Temple; Lawrence.
Music.
- Guier, Ola Franklin; Kiowa.
Botany, Ornithology.
- Gustafson, Mary Louise; Lawrence.
Education.
- *Gwin, Willard Peter; Lawrence.
- *Hadley, Ernest Elvin; Lawrence.
Medicine.
- Haglund, Edwin W.; Lindsborg.
English, Education.
- *Hakan, Albert J.; Lawrence.
Chemistry, Medicine.
- *Hake, W. O.; Lawrence.
Law.
- Hale, Earle C.; Lawrence.
Sociology, Economics.
- Hale, Mrs. Allie; Lawrence.
Economics, Botany, Sociology.
- Hall, Gail; McPherson.
English, Journalism, Public Speaking,
Home Economics.
- Hanson, Millie; Arkansas City.
Education, Zoology.
- Hargett, Helen Ruth; Lawrence.
French, Sociology.
- Hargett, Marion; Lawrence.
Drawing.
- *Hargett, Ray Hudson; Lawrence.
Chemistry.
- *Harper, Mabel Jane; Frankfort.
French, English, Sociology.
- Harper, Margaret; Lawrence.
Entomology, Public Speaking.
- Harrel, Chastain G.; Atchison.
Chemistry.
- *Harrington, Roscoe S.; Augusta.
Chemistry.
- Harris, Annie G.; Lawrence.
German.
- Harris, Cathlene Rose; Eudora.
History.
- Hart, H. B.; Dexter.
French, Chemistry, Music.
- Harting, Mrs. Walter C.; Lawrence.
French, Zoology.
- Hartwell, Olive W.; Wichita.
Education, Zoology.
- Hase, Clara A.; Lawrence.
Music.
- Haury, Irvin; Newton.
French.
- Hawkins, Ashley D.; Lawrence.
Education.
- Hawkins, Winfred W.; Lawrence.
Physics.
- Hein, August Fred; Basehor.
Sociology, French.
- Heleker, Howard F.; Frankfort.
Chemistry.
- Helle, Clara A.; *Woodside, Ohio.*
Education, Journalism, Sociology, English.
- *Helmer, Sophia Bertha; Lawrence.
Home Economics.
- Henderson, Algo D.; Solomon.
Economics, English.
- *Hendrickson, Ethel; Lawrence.
History, English.
- *Hendrickson, Floyd C.; Lawrence.
Medicine.
- Henley, Marian; Lawrence.
Drawing.
- Henry, John B.; Lawrence.
Bacteriology.
- Hensley, James A.; *Dinuba, Cal.*
Education.
- *Hereford, Melvin; Marion.
Medicine.
- Herron, Allen Murray; Onaga.
Education, Sociology.
- *Herthel, Ruth; Clafin.
English, Mathematics.
- *Hertzler, Agnes; *Kansas City, Mo.*
Medicine.
- Higgins, Thomas J.; Harper.
Education, Spanish, English.
- Hill, Alfred G.; Topeka.
English, Journalism, Sociology.
- Hills, Elvert R.; *Carrier, Okla.*
Journalism, Sociology, History, Economics.
- Hitchcock, G. C.; Silver Lake.
Education, Mathematics, Botany,
Physical Education.
- Hoar, M. Ethel; Lawrence.
English.
- *Hockenhull, Floyd L.; Lawrence.
Chemistry.
- Hodder, Fredericka; Lawrence.
Latin, English, French.
- Hoernig, Lena; *Kansas City, Mo.*
English, Zoology, French.
- *Hoff, Grace Elizabeth; Lawrence.
Education, English, Sociology.
- Hoffman, Georgia; Perry.
Music.
- *Hoffmann, Harry William; Lawrence.
Law.
- *Hoffmann, William Edwin; Lawrence.
Entomology.
- Hogrefe, Pearl; Wichita.
English.
- *Holland, Benjamin L.; Caney.
Law.
- *Holloway, Katherine S.; Lawrence.
Public Speaking, Drawing.
- Holmann, Olive; Olathe.
German, English.
- Holtzschue, Helen L.; Fredonia.
German.
- Honsaker, Irene W.; Highland.
Education.
- Hood, Catherine E.; Lawrence.
Drawing.
- *Hoover, John H.; McPherson.
Mathematics, Economics.
- *Hostetler, Ruby Madelyn; Delphos.
Psychology, Physiology.
- Hudiburg, Walter Scott; Independence.
Medicine.
- Hudson, Pearl; Neodesha.
Education.
- Husted, Marie; Lawrence.
Music.
- Huff, Bessie Maree; *Muskogee, Okla.*
German, English.
- Huffman, Genevieve; Abilene.
Education, Psychology, Music.
- Huffman, Georgia; Abilene.
Music.
- Hughes, John Francis; Chanute.
Education, History.
- *Hull, Louis Milton; Norton.
Chemistry.

* Also in current session.

- Hull, Myra Elsa; Nickerson.
French, Public Speaking, Philosophy.
Hultz, Arlo; Lawrence.
Music.
Huntington, Forrest William; Lawrence.
Education, Botany.
Huntington, Mrs. Vivian B.; Lawrence.
Education.
Huston, Harry E. K.; Winfield.
Education.
Hyre, Florence Evelyn; Lawrence.
English, Education, Medicine.
Irvin, Roy Robt.; Lawrence.
Chemistry.
Irwin, M. Grace; Baldwin.
English, Education.
*Irwin, Margaret L.; Bazine.
Bacteriology.
*Isenberger, Robert M.; Natoma.
Chemistry.
*Isern, Elmer H.; Ellinwood.
Chemistry.
Jackson, Byrdie D.; Kansas City.
Education.
*Jackson, Hester King; Lincoln.
English.
Jacob, Christian T.; Ottawa.
Education, Physical Education.
*Jaggard, Guy H.; Lawrence.
Sociology, Education, Economics, History.
Janney, Wm. M.; Eureka.
Chemistry.
Jaqua, Josephine; St. Francis.
Bacteriology, Education.
Jaudon, Virgil H.; Kansas City, Mo.
History, Education.
Jefferies, John A., jr.; Udall.
Education.
Jennison, James; Sarcozie, Mo.
Education.
*Jewett, Emma Frances; De Soto.
Mathematics, Spanish.
Johnson, Alice E.; Holton.
Education, Public Speaking.
*Johnson, Carl Luther; Topeka.
Chemistry.
Johnson, E. Marion; Lawrence.
Education, English.
*Johnson, Emsley T.; Lawrence.
Medicine.
Johnson, Mrs. Gertrude; Severy.
History, Mathematics, Economics.
*Johnson, Howard H.; Garnett.
Chemistry.
Johnson, Samuel A.; Troy.
German, Education.
Jones, Madge; Kansas City.
History.
Jones, Ross; Kingfisher, Okla.
Chemistry.
Jordan, Isaac N.; Lawrence.
Chemistry.
Kaho, John Franklin; Topeka.
Education.
Kantz, Ralph C.; Sylvia.
Education, Mathematics.
*Katterjohn, Daniel L.; Enterprise.
Education, Sociology.
Keeler, Dorothy; Lawrence.
Education, Economics, Zoology.
*Kehl, Charles Cyrus; Newton.
Medicine.
Kelsey, Hazel; Tonganoxie.
Drawing, Education.
Kelsey, Helen; Tonganoxie.
Home Economics, Education.
Kennedy, Beth; Clay Center.
English, History.
Kennedy, Grace E.; Holton.
Economics, Botany.
Kent, Mabel; Paola.
Education, Latin.
Keplinger, Gertrude; Zanesville, Ind.
Home Economics.
Ketchum, Pauline; Lawrence.
Music.
Kettering, Charles V.; Miltonvale.
Music.
Kidd, Ruth Elizabeth; Sedalia, Mo.
Botany, English.
Kidwell, Avis; Lawrence.
Home Economics, Music, Public Speaking.
*Kidwell, Marjorie; Lawrence.
Physiology, Physical Education, Botany.
*Kidwell, Zolan L.; Lawrence.
Economics, Education, Physical Education.
King, Gertrude C.; Atchison.
Education, English.
Kinney, Genevieve; Lawrence.
Music, English, Philosophy.
*Kinney, May; Lawrence.
Zoology, Home Economics.
Kirkendall, Jeanne; Lucas.
Education, Music, Public Speaking.
Sociology.
Kistler, Oscar D.; Alta Vista.
Linotype.
Kizler, Alice; Hillsboro.
English, Sociology, Zoology.
Kizler, Ida; Hillsboro.
French, German, English.
*Knight, Nathaniel P.; Lawrence.
Entomology, Zoology.
*Knoles, James L.; Kingman.
Zoology, Chemistry, Medicine.
*Konantz, J. S.; Glade.
Mathematics, English.
*Korb, John H.; Lawrence.
Zoology.
*Kreeck, Charlotte; Lawrence.
Education.
Kreider, Cottier C.; Lawrence.
Chemistry.
Krisan, Velma; Haddam.
Music.
Kunkel, Gladys Irene; Lawrence.
Physiology, English.
Kurtz, Ruth; Overbrook.
English Education.
Lane, Ruth C.; Lawrence.
French, Home Economics, Botany.
*Larson, Mary E.; Assaria.
Entomology, Zoology.
Latta, Trine; Wichita.
Chemistry.
*Leary, Ora; Kansas City.
Chemistry.
*Leon, Irma C.; Lawrence.
Education, Mathematics, English.
*Levi, Laura May; Olathe.
English, Sociology.
Lindbergh, B. W.; Kansas City, Mo.
Sociology.
Lindsay, Marian; Topeka.
Education.
Little, Elizabeth A.; Eureka.
Home Economics, Education.
Lloyd, Mary; Atchison.
Education, History.
Lockett, Dora; Wichita.
Music.
Lockhart, W. E.; Lawrence.
Education, History.
Loesch, Louise; Lawrence.
Physiology, Philosophy.
Lofin, Ethel E.; Ellis.
Home Economics.
Lueas, Minnie M.; Lawrence.
Public Speaking, English.

* Also in current session.

- *Lutz, Jane Elizabeth; Holton.
Zoology.
- Lyons, Ida Grace; Lawrence.
Education, English.
- Lytle, W. Orland; Lawrence.
Physics.
- MacDonald, Margaret A.; Waterville.
Education, English, Philosophy.
- *Mack, Inez; Lawrence.
Entomology, Sociology, Philosophy.
- Mackey, Leo J.; Frankfort.
Chemistry.
- *Mackie, Elizabeth; Lawrence.
English, Music.
- Mac Kinnon, Inez M.; Kansas City.
Education, German.
- Magaw, W. G.; Topeka.
Education.
- Magill, Helen Lucile; Sabetha.
Psychology, Education.
- Malin, James Claude; Lawrence.
History, Economics.
- *Maloney, Owen Wayne; Lawrence.
Chemistry.
- Marlowe, Myrtle; Hartford.
Physics, Physical Education.
- Marquardt, George; Enterprise.
Education.
- *Marquis, George; Lawrence.
Medicine.
- Marshall, Earl E.; Elk City.
Entomology.
- Marshall, George H.; Augusta.
Education.
- *Marshall, Hugh A.; Fredonia.
Public Speaking, Economics.
- Martin, Ethel M.; Lawrence.
Home Economics, Botany, Physical Educ.
- Martin, Gertrude E.; Wichita.
Sociology, English, Zoology.
- Martin, Lottie Gretchen; *Kansas City, Mo.*
Physical Education.
- *Martin, Rebecca; Garnett.
Education.
- Means, Delbert W.; Wichita.
Physics.
- Menehan, F. J.; Beattie.
Law.
- *Merrill, Emma E.; Lawrence.
Music.
- Metsker, Sonora Tulena; Lawrence.
History, English, Economics.
- *Meyer, Everett R.; *Oregon, Mo.*
English.
- Miles, Kate B.; Salina.
Latin, Greek, Education.
- Miles, Ann Margaret; Lawrence.
Home Economics, Zoology.
- Milett, Charles; Tonganoxie.
Botany, History.
- Miller, Dorothy; Topeka.
Education, Sociology.
- Miller, Raymond F.; Emporia.
Physics.
- *Mitchell, Claire Winifred; Geuda Springs.
German.
- Mode, Frankie B.; *Columbia, Mo.*
Music.
- *Monteith, John Nelson; *Kansas City, Mo.*
Public Speaking, History.
- *Montgomery, Geo. A.; Mankato.
Journalism, Public Speaking, History,
Sociology.
- *Montgomery, John Alexander; Lawrence.
Journalism, Botany, Sociology.
- Montgomery, Robt. Hargrove; *San Marcos, Tex.*
Economics, History.
- Moore, Vernon Aubrey; Gas.
Journalism, Sociology, Economics.
- *Morgan, Howard C.; Kansas City.
Education, English, History.
- Morgan, Newell Isaac; *Hiawatha.*
Zoology.
- Morris, Christian E.; *Kansas City, Mo.*
Education.
- Mortimer, May; Cherryvale.
English, Physical Education, Sociology,
Zoology.
- Moss, Alice R.; *Kansas City, Mo.*
Home Economics, Philosophy.
- *Mott, James M.; Kansas City.
Zoology, Medicine.
- *Mowery, Glenn E.; Scott.
Medicine.
- Mull, Ellenore Rieta; Lawrence.
Education.
- Mundell, Flavius A.; Nickerson.
Economics, History.
- Murphy, Adele M.; Jarbalo.
Botany, Psychology.
- *Murphy, Helen; Jarbalo.
Chemistry, Entomology.
- *Musson, Edith; *Norborne, Mo.*
English.
- *Myers, Burton A.; Osborne.
Medicine.
- *McBride, Nita; Onaga.
English, Home Economics.
- McBride, Ruth Hynes; *Coalgate, Okla.*
English, Education.
- McCarty, Sophia M.; El Dorado.
English.
- McCauley, Evelyn; Hoisington.
History.
- *McDowell, Carroll; Arkansas City.
Education.
- McDowell, Sadie L.; La Cygne.
Mathematics.
- McHale, Cecil; Kansas City.
Zoology.
- *McIntee, M. B.; Lawrence.
Public Speaking, Economics, Sociology.
- *McIntire, Emery J.; Lawrence.
Chemistry.
- *McKibbin, Harry Clinton; Lawrence.
English.
- *McKinney, Helen Julia; Iola.
Education, German.
- McLean, Opal; Jewell City.
Education.
- McNalley, Anna; Michigan Valley.
Home Economics, Sociology, Zoology.
- McNaught, James B.; Girard.
Physics, Zoology.
- McNaughton, Alicia B.; Tonganoxie.
English.
- McPherson, Wm. L.; Wichita.
Chemistry.
- McQuiston, Raymer; Independence.
Philosophy.
- *McVey, Roy V.; Mont Ida.
Chemistry.
- Nelson, Allene; Lawrence.
Chemistry, Physical Education, Sociology.
- Nelson, Allene Marie; Lawrence.
Education.
- Nelson, Charles Sumner; Westphalia.
Medicine.
- *Nelson, Gladys; Lawrence.
Drawing.
- Nelson, Harley A.; McPherson.
Chemistry.
- Nelson, Josephine; Lawrence.
Journalism, Drawing, History,
Mathematics.
- *Nelson, Lawrence S.; Iola.
Medicine.

* Also in current session.

- *Neumann, Warren R.; Lawrence.
Chemistry.
Neveis, Z. J.; Missoula, Okla.
Education.
Nevin, Lella May; Lawrence.
Physical Education, Sociology, History.
- *Newman, Carl S.; Dighton.
Medicine.
Newman, Mildred; Lawrence.
Mathematics, Education.
- *Nordstrom, Arnold R.; Marquette.
Economics, English, History.
- *Norton, James G.; Newton.
Law.
Nowell, Ruth; Columbia, Mo.
Sociology, Greek, Physical Education.
- *Nungesser, Ella; Lawrence.
Music.
- *Nutt, Donald F. H. W.; Lawrence.
Mathematics, Spanish.
- *O'Brien, Elizabeth D.; Lawrence.
Music.
- *Ocker, Cecile; McLouth.
Music.
O'Connell, Mary E.; Salina.
Home Economics.
- *Oglevie, Rial; Burr Oak.
Physics, Spanish.
Osterhout, Fred W.; Attica.
Education.
Owens, George B.; Kansas City.
Economics, Sociology, Education.
- *Owens, Guy E.; Topeka.
Chemistry, Medicine.
Owens, Hugh Henry; Chanute.
Medicine.
- *Palmer, Gertrude O.; Lawrence.
English, Greek.
- *Park, Bart; Atchison.
Chemistry.
Parker, J. Collins; Bonner Springs.
Education.
Parker, Mary Elizabeth; Lawrence.
Spanish.
Parks, Agnes M.; Kansas City, Mo.
English.
Paterson, Donald G.; Lawrence.
Medicine, Psychology.
Patterson, Alphonso T.; Clayton, Mo.
English, Public Speaking.
Patterson, Harry Jewel; Cherryvale.
Law, Economics.
- *Peairs, Helen; Lawrence.
Psychology, Drawing.
Peairs, M. Ruth; Lawrence.
Education, Public Speaking.
Pedroja, Mary; Lawrence.
Spanish, Botany.
Penn, Pertilla; Atchison.
Education, Public Speaking, Physical Education.
Percival, Harry F.; Chanute.
Education, Latin.
Perkins, Lulu C.; Gardner.
Music, Psychology.
Perkins, Marguerite A.; Eudora.
German, English.
Perry, Wilma; Richland.
Home Economics, Education.
- Peters, A. Hazel; Lawrence.
Drawing, Education.
Peters, Gerald R.; Independence.
Bacteriology, Zoology.
- *Pettersen, Edward C.; Beloit.
Physics.
Pickard, Bernice; Lawrence.
Public Speaking, Journalism, History.
- Pickens, Mary; Rogers, Ark.
English, Education.
- *Pittman, Clara A.; Hooker, Okla.
English, Botany, Sociology.
Pitts, Steele Mildred; St. Joseph, Mo.
Music.
- *Plank, Elizabeth; Lawrence.
Sociology, Journalism.
- *Plumb, Luella; Topeka.
Music.
- *Porterfield, Lois; Holton.
French.
- *Potter, Clarence E.; Girard.
Zoology, Education.
- Potts, Howard W.; Edmond, Okla.
History, French, Physical Education.
- Power, Elsie May; Baldwin.
Education.
- Price, Bertha C.; Winfield.
Chemistry, Philosophy.
- Price, Hazel I.; Everest.
Education, English.
- Price, Maude A.; Wellington.
English, Philosophy.
- Priest, Walter Scott, jr.; Wichita.
Bacteriology.
- Pringle, Kenneth W.; Alma.
Law, Zoology.
- Queal, Lucy M.; Kansas City, Mo.
History, French, Economics.
- *Querfeld, Dorothy; Lawrence.
Physical Education, English,
Public Speaking.
- Quick, Hazel Lois; Redfield.
English, Mathematics, Sociology.
- Ragle, Florence; Iola.
Education, Home Economics,
Physical Education.
- *Ramsey, James Blaine; Garnett.
Chemistry.
- *Randolph, Clarence Albert; Lawrence.
Law.
- *Raub, Lorna Marie; Lawrence.
Music.
- Ray, Jennie M.; Lawrence.
Education, Music.
- *Raymond, Walter A.; Rago.
English, Education.
- Rearick, Anna J.; Lawrence.
Psychology, History, Philosophy, Zoology.
- Reece, Carrie Alice; Argonia.
Public Speaking, Education,
Physical Education.
- Reed, Robert H.; Almena.
Sociology, History.
- Reese, Webster P.; Kincaid.
Education.
- Reser, Oscar O.; Kansas City, Mo.
History, Sociology.
- Reynolds, Cora I.; Lawrence.
Music.
- Rhine, Orin M.; McLouth.
Education.
- Rhoades, Wayne; Marysville.
Chemistry.
- *Rice, Alice; Lawrence.
Education.
- *Rice, Gladys; Lawrence.
Education, Medicine.
- *Richardson, Homer H.; Iola.
Chemistry.
- *Rickard, Marjorie A.; Lawrence.
English, Education.
- Riggs, Henry Clay; Lawrence.
Education, Physics.
- Riste, Rose A.; Chopaka, Wash.
Medicine.
- Ritter, Neva; Iola.
Education.
- *Robbins, Martin V.; Kansas City.
Zoology.

* Also in current session.

- *Roberts, Mary; Lawrence.
Journalism, Education.
Roberts, Richard G.; Lyndon.
Chemistry.
Robinson, Antoinette; Eskridge.
Education, Sociology.
- *Rockey, Mildred J.; Lawrence.
Education, English.
Rodgers, Chas. H.; Wa Keeney.
Chemistry.
- *Rogers, Annie I.; Lawrence.
Education.
- *Roles, Edith M.; Kansas City.
History, Botany, English.
Ross, Esther V.; Topeka.
English, Music.
Ross, Harry R.; Sterling.
Medicine.
Rudebaugh, Myrle A.; Denton.
Music, Drawing, Physical Education.
Rudolph, Mrs. Rose; Lawrence.
Music.
- *Rudolph, Ruth G. W.; Lawrence.
German, Sociology.
Ruhlandt, Helen Hays; Osawatomie.
Education, Sociology.
Rumsfeld, Herbert W.; Lawrence.
Physics, Chemistry.
Sankee, Rachel; Lawrence.
Spanish.
Scalapino, Anthony; Everest.
Education.
Scalapino, Wm.; Everest.
Education.
Scheer, George Edman; Topeka.
Education, Economics.
- *Schell, Mignon; Wichita.
English, Education.
Schenk, Giralda; Lawrence.
Public Speaking, Physical Education,
Music, Botany.
- *Schenk, Mary Lillian; Lawrence.
Zoology, Physical Education, History,
Economics.
- *Schick, Fern; Lawrence.
Economics, English, Physical Education.
Botany.
Schmitt, P. N.; Oketo.
Education.
- *Schnitzler, Fritz; Wichita.
Chemistry.
- *Scholer, Henry C.; Bonner Springs.
Medicine.
Schwinley, Mrs. Bertha J.; Lawrence.
Home Economics.
- *Scott, Ethel; Columbus.
Botany, English.
Scott, Hazel; Garnett.
Music, Psychology.
Seaver, Wirt D.; Marquette.
Education.
Sederlin, Elvin Louis; *Elk Mountain, Wyo.*
Medicine.
Seiver, Nelle; Salina.
Drawing, Education.
- *Selig, Frances M.; Lawrence.
English, Education.
Sellers, James L.; Neosho Rapids.
History, Education.
Sellers, Lyle M.; Leavenworth.
Physics, Medicine.
Sewell, Gladys; Elk City.
Music.
- *Shafer, Annie Neil; Olathe.
Education, Spanish.
Shaw, Laurenia M.; Lawrence.
Education.
Shedd, Bessie H.; Topeka.
Latin, Education, Sociology, Philosophy.
- *Shelley, Harold John; Elmdale.
Physics, Chemistry.
Shinn, Cora; Lawrence.
Education.
Shinn, Mrs. Frances I.; Cherryvale.
Education.
Shinn, Henry A.; Cherryvale.
Education.
Shore, Belle; Topeka.
Education, English, Latin.
*Shores, Harold P.; Burr Oak.
Chemistry.
Shull, Charles A.; Lawrence.
Chemistry.
- *Simon, Loren; Seneca.
Zoology.
Simpson, Mary Jane; Pratt.
Psychology, English.
- *Skaer, H. A.; Augusta.
Chemistry.
- *Skinner, Hazel; Garden City.
English.
Smiley, Verna; Silver Lake.
Mathematics.
Smith, Mrs. Blanche; Lawrence.
Botany, English.
Smith, Dee; Lawrence.
English.
Smith, Elizabeth M.; Independence.
History, Sociology.
Smith, Elsie; Leavenworth.
Journalism.
Smith, Etta Auguste; Lawrence.
Music.
Smith, Eva Floy; Delphos.
English, Mathematics, Physical Education.
- *Smith, Grant R.; Lawrence.
Mathematics, English.
Smith, Irene A.; Dodge City.
Latin, Home Economics.
- *Smith, Nellie V.; Lawrence.
Education, German, History.
Smith, Otto Orville; Dodge City.
Economics, Education.
- *Smith, Polly M.; Lawrence.
Education.
Snoddy, Clarice A.; Burlingame.
Education, Economics.
- *Sopher, M. Myrtle; Topeka.
English, Botany, Zoology.
Spencer, Anna Ruth; Emporia.
Journalism.
- *Sperry, Charles C.; Beverly.
Zoology.
Sperry, Vivien; *Kansas City, Mo.*
History, English.
Spilman, Mignonette; McPherson.
Education, Latin.
Spurrier, Leo; Kingman.
Economics.
Staples, Sarah G.; Lawrence.
English, History.
- *Stateler, Ernest S.; Minneola.
Bacteriology.
Steckel, Minnie L.; Woodbine.
English, Spanish.
Steen, W. O.; Beloit.
Education.
Stephens, Mrs. Myrtle C.; Emporia.
Sociology, Education.
Stephenson, Beulah I.; Leavenworth.
English, Education.
Steven, Laurene; Lawrence.
Spanish.
- *Stevens, Harry Leonard; Hutchinson.
Public Speaking, History.
- *Stevens, R. U.; *Kansas City, Mo.*
Chemistry, Medicine.

* Also in current session.

- Stevenson, Edward; Lawrence.
Chemistry.
- *Stevenson, Harriet Maude; Lawrence.
Education.
- Stevenson, Orma R.; Altamont.
Education, Public Speaking.
- Stewart, Olive Maude; Baldwin.
German.
- *Stivison, Elliot Roy; Lyndon.
Medicine.
- Stickel, Louise; Linwood.
English, French.
- *Stodder, Richard H.; Burden.
History, Public Speaking, Zoology, Botany.
- Stone, Almeron J.; Adams.
Sociology, History.
- Stone, Sadie M.; Lawrence.
Education, Spanish.
- Stortz, Frank; Concordia.
Physics.
- Strahan, Gladys Allene; *Belton, Mo.*
German, Latin.
- Strand, Lillie Oliva; Independence.
German, History, Mathematics.
- *Strange, Vivian N.; Perry.
Education.
- Strowig, Mrs. Nell; Alma.
Education, Zoology.
- Stryker, Mary S.; *La Grange, Ill.*
Drawing.
- Stuart, K. Stella; Lawrence.
Education.
- Studebaker, Ellis M.; McPherson.
Education, Sociology.
- Studer, William J.; Herndon.
Journalism, Public Speaking, History.
- Stutz, John Godfrey; Utica.
Sociology.
- Sughrue, Cecil; Dodge City.
Public Speaking, English.
- Sughrue, Nellie; Dodge City.
Education, English.
- *Sullivan, Bradley; Mt. Hope.
Medicine.
- Sutter, Winford H.; *Kansas City, Mo.*
Chemistry.
- *Swanson, Minnie C.; McPherson.
Education, Botany.
- Swingle, Edna L.; Lawrence.
English.
- Swingle, Harry Wilson; Lawrence.
Psychology, Sociology, Philosophy,
History.
- Symms, Edith Myrtle; Hutchinson.
Sociology, Public Speaking, Physical Edu-
cation, Zoology.
- Takaki, Shin-ishi; *Tokio, Japan.*
Chemistry.
- *Talbot, Homer; Lawrence.
Sociology, Economics.
- Tate, James N.; Lakin.
Chemistry.
- Taylor, Bert Allen; Lawrence.
Journalism.
- Taylor, Frances L.; Topeka.
English, History, Music,
Physical Education.
- Taylor, Ross J.; Lawrence.
Education, Psychology.
- *Teitzel Hazel L.; Wichita.
Education, Philosophy, German.
- Templeton, Margaret; Emporia.
Education.
- *Terry, George S.; Chanute.
Bacteriology.
- Thatcher, Blanche Mae; Great Bend.
French, Zoology.
- Thiele, Edna B.; Washington.
History.
- *Thomas, Chas. L.; Lawrence.
Sociology, Zoology.
- Thomas, Ernest A.; Quenemo.
History, Psychology.
- Thomas, Mona Mae; Topeka.
History, Education.
- Thompson, Fred M.; Horton.
History, Education.
- Thompson, Gordon B.; Lawrence.
Sociology.
- Thurston, Benj. Lee; *Tulsa, Okla.*
Physics.
- Titus, Edith M.; Topeka.
Latin, Spanish.
- *Todd, Geo. C.; Lawrence.
Entomology.
- Tompkins, M. H.; Kansas City.
Education.
- Torrey, Alden H.; Kansas City.
Mathematics, French.
- Torrey, Lois M.; Kansas City.
Education, Public Speaking.
- Townsend, Clara Virginia; *Kansas City, Mo.*
Education.
- *Trant, Sara; Edwardsville.
Zoology, Entomology, Botany.
- Trinkle, Josie M.; Lawrence.
Public Speaking.
- True, Ella P.; Topeka.
History, Home Economics.
- *Tucker, Dorothy; Lawrence.
Physiology, Physical Education.
- Tuller, Harriet; Baldwin.
Education, Spanish.
- *Uhls, Kenneth B.; Overland Park.
Medicine.
- Unruh, Della S.; Larned.
Physiology.
- *Van Arsdale, Mary; Lawrence.
Home Economics, Education.
- Van Slyck, Willard N.; Pratt.
Education, Zoology.
- *Van Velzer, Harry L.; Fort Scott.
Chemistry, Mathematics, Philosophy,
Zoology.
- *Veatch, Harry J.; Weir City.
Medicine.
- *Waggoner, Jack H.; Lawrence.
Chemistry.
- Wagner, Edith; Ellsworth.
Music, English, Physical Education.
- Wagner, Ella J.; Ellsworth.
Sociology, History, Music,
Physical Education.
- Wakefield, Fay M.; White Cloud.
Music.
- Waldo, Guy L.; Ellis.
Law.
- Walker, Ada; Topeka.
Music.
- *Walker, Carl L.; *Kansas City, Mo.*
Chemistry.
- Walling, Lalia V.; Lawrence.
Chemistry.
- *Walling, Lulu G.; Lawrence.
Entomology, Philosophy.
- *Walter, Edmund K.; Lawrence.
Medicine.
- *Walters, Fay C.; Lawrence.
Chemistry.
- *Watson, Charles H.; Lawrence.
Education, Physics, Zoology.
- Watson, Olive; Sterling.
English, Sociology.
- Weaver, Glenn S.; Concordia.
Medicine.
- *Weaverling, Helen C.; *Belle Plaine, Iowa.*
Entomology.

- Wedell, Emilie; Lawrence.
Sociology, Public Speaking, Education.
- *Wedell, Emma; Lawrence.
Education.
- *Wedell, Hugo T.; Lawrence.
Law.
- Weir, O. J.; Lawrence.
Mathematics, Psychology.
- Welch, Lena; Ottawa.
Botany, English, Physical Education.
- *Welker, Joseph E.; Lawrence.
Medicine.
- Weller, Ervin Bruce; Kansas City.
Economics, Sociology, Education.
- *Wentworth, Frank R.; Russell.
Botany, Mathematics.
- *Wenzel, John Herman; Enterprise.
Chemistry.
- West, Ada Helen; Lawrence.
Education, Psychology.
- West, C. Omer.; Bronson.
Medicine.
- *Westerfield, Marie B.; *Kansas City, Mo.*
Sociology, Education.
- Wetherbee, Ralph; Topeka.
Education, Spanish.
- *Wharton, Thelma; Parsons.
Music.
- Wheeler, Charles W.; Wamego.
Education.
- Whirlow, Florence; *Kingfisher, Okla.*
English, Education, German.
- White, E. A.; Lawrence.
Chemistry.
- *White, Edith K.; Lawrence.
Botany, English.
- Whitlow, Cyril M.; Moran.
Education.
- Whitney, Martha S.; Olathe.
Latin, Spanish, Education.
- *Wilbur, Clifford H.; Lawrence.
Chemistry, Medicine.
- Wilburn, Homer V.; Kansas City.
Physics, Mathematics.
- Wilhite, Bessie; Rosedale.
Education, Sociology.
- Williams, Daisy L.; Osage City.
Latin, Education.
- Williams, Harriett L.; Preston.
Education.
- Wilson, Kathryn M.; Lawrence.
Journalism, Public Speaking.
- Wiltfong, Hubert H.; Lawrence.
Chemistry.
- Windett, Florence; Quenemo.
Public Speaking, Education.
- Wingfield, M. Beulah; Lawrence.
Music, English, Public Speaking,
Sociology, Zoology.
- *Winsor, Carl; Atchison.
Chemistry.
- Wise, Genevieve A.; Topeka.
English, Music.
- Woodbury, Blanche; Lawrence.
Education.
- Woods, Ellis Walker; *Tulsa, Okla.*
Mathematics, Education.
- Woodward, George J.; Lawrence.
Law.
- Woodworth, Jessie Bell; Tecumseh.
Home Economics, Music.
- Woolsey, Carrie I.; Lawrence.
Zoology.
- Wright, Franklin T.; Barnes.
Music, Botany.
- Wyland, Emma Frances; Harlan.
Education, Sociology.
- Wynn, George E.; Marquette.
Zoology, Medicine.
- *Yeater, Georgia R.; Lawrence.
Physics, Chemistry.
- Young, Agnes; *Montrose, Colo.*
Education, History.
- Ziesenis, Harry Charles; Lawrence.
Chemistry.
- Zimmerman, Ruby C.; Hutchinson.
English, History.

SUMMER SESSION, 743.

* Also in current session.

OTHER INSTITUTIONS

FROM WHICH CANDIDATES FOR DEGREES WERE ADMITTED WITH
ADVANCED STANDING, 1917-'18.

<i>Institutions.</i>	<i>Candi- dates.</i>	<i>Institutions.</i>	<i>Candi- dates.</i>
Arkansas College.....	1	Northwestern College.....	1
Baker University.....	16	Northwestern University.....	2
Barnard College.....	1	Oklahoma A. & M. College.....	2
Beloit College.....	1	Oklahoma Normal.....	1
Bethany College.....	1	Oklahoma School of Mines and Metallurgy,	1
Bethel College.....	1	Oberlin College.....	2
Bonebrake Theo. Sem.....	1	Oswego College.....	2
Carnegie Institute.....	1	Ottawa University.....	8
Central College.....	1	Park College.....	2
Christian College.....	1	Phillips University.....	2
Colorado College.....	2	Salina Normal.....	1
Colorado School of Mines.....	1	Stout Institute.....	1
Colorado State Teachers' College.....	2	St. Joseph, Jr., College.....	2
Columbia University.....	1	St. Louis College of Pharmacy.....	1
Cooper College.....	1	St. Mary's College.....	1
Cornell University.....	2	St. Mary of the Wood.....	1
Defiance College.....	1	St. Thomas.....	1
Drury College.....	1	Southwestern College.....	9
Emporia College.....	4	Southwestern Texas Normal.....	1
Fairmount College.....	12	Talladega College.....	1
Forest Park University.....	1	Tillotson College.....	1
Fort Hays Normal.....	2	Union College.....	1
Friends University.....	10	University of Arkansas.....	1
Goucher College.....	1	University of California.....	2
Greeley, Colorado, University.....	1	University of Chicago.....	4
Heidelberg University.....	1	University of Cincinnati.....	1
Iowa Wesleyan.....	1	University of Colorado.....	7
Kansas City Polytechnic Institute.....	14	University of Maryland.....	1
Kansas City University.....	1	University of Michigan.....	1
Kansas State Agricultural College.....	16	University of Minnesota.....	2
Kansas State Manual Training Normal.....	9	University of Missouri.....	6
Kansas State Normal.....	24	University of Nebraska.....	1
Kansas Wesleyan.....	6	University of Ohio.....	1
Lamar College.....	1	University of Oklahoma.....	2
Lawrence College.....	1	University of Pennsylvania.....	1
Lebanon University.....	1	University of Texas.....	1
Lewis Institute.....	1	University of Washington.....	2
Lindenwood College.....	3	University of Wisconsin.....	3
Mass. Inst. Tech.....	1	Valparaiso University.....	1
Midland College.....	3	Ward-Belmont School.....	5
Miltonvale Wesleyan.....	1	Warrensburg State Normal.....	2
Monticello Academy.....	1	Washburn College.....	18
Morningside College.....	1	Washington University.....	3
Mt. Holyoke College.....	1	Wellesley College.....	1
Muhlenberg College.....	1	Western Reserve University.....	1
McPherson College.....	4	Wilberforce University.....	1
National Park Sem.....	3	Yankton College.....	1
Nebraska State Normal.....	2		
Nebraska Wesleyan.....	2	Candidates.....	281
Nickerson College.....	2	Institutions.....	97

NOTE.—Candidates for degrees, included in above tabulation, who offered credentials from two or more schools, 23.

ENROLLMENT, 1917-'18.

SCHOOLS.	Men.	Women.	Total.
THE GRADUATE SCHOOL.....	42	45	87
THE COLLEGE OF LIBERAL ARTS AND SCIENCES.....	790	815	1,605
Senior Class.....	99	153	252
Junior Class.....	120	161	281
Sophomore Class.....	181	221	402
Freshman Class.....	325	217	542
Specials.....	65	63	128
THE SCHOOL OF ENGINEERING.....	389	10	399
Senior Class.....	42	.....	42
Junior Class.....	44	.....	44
Sophomore Class.....	85	1	86
Freshman Class.....	152	3	155
Specials.....	66	6	72
THE SCHOOL OF FINE ARTS.....	22	203	225
Senior Class.....	.....	11	11
Junior Class.....	.....	17	17
Sophomore Class.....	1	35	36
Freshman Class.....	4	47	51
Specials.....	17	93	110
THE SCHOOL OF LAW.....	111	1	112
Senior Class.....	26	.....	26
Middle Class.....	30	1	31
Junior Class.....	40	.....	40
Specials.....	15	.....	15
THE SCHOOL OF PHARMACY.....	37	5	42
Senior Class.....	10	1	11
Junior Class.....	9	2	11
Sophomore Class.....	9	.....	9
Freshman Class.....	2	1	3
Specials.....	7	1	8
THE SCHOOL OF MEDICINE.....	138	32	170
Senior Class.....	17	.....	17
Junior Class.....	21	.....	21
Sophomore Class.....	32	6	38
Freshman Class.....	68	1	69
Specials.....	.....	1	1
Nurses.....	.....	24	24
THE SCHOOL OF EDUCATION.....	29	287	316
Graduates.....	5	6	11
Seniors.....	19	110	129
Juniors.....	4	122	126
Specials.....	1	49	50
Total enrollment, regular session.....	1,558	1,398	2,956
Names counted twice.....	230	380	610
Totals.....	1,328	1,018	2,346
THE SUMMER SESSION.....	312	431	743
Summer students in current session.....	126	123	249
Totals.....	186	308	494
Total registration, 1917-'18.....	1,514	1,326	2,840

CLASSIFICATION OF STUDENTS.

BY KANSAS COUNTIES.

Allen.....	42	Hamilton.....	1	Phillips.....	8
Anderson.....	22	Harper.....	13	Pottawatomie.....	11
Atchison.....	23	Harvey.....	31	Pratt.....	14
Barber.....	10	Haskell.....	1	Rawlins.....	3
Barton.....	20	Jackson.....	16	Reno.....	59
Bourbon.....	21	Jefferson.....	25	Republic.....	5
Brown.....	36	Jewell.....	36	Rice.....	18
Butler.....	32	Johnson.....	23	Riley.....	14
Chase.....	8	Kearny.....	3	Rooks.....	6
Chautauqua.....	7	Kingman.....	11	Rush.....	1
Cherokee.....	22	Kiowa.....	6	Russell.....	11
Cheyenne.....	4	Labette.....	23	Saline.....	21
Clark.....	8	Lane.....	3	Scott.....	3
Clay.....	14	Leavenworth.....	59	Sedgwick.....	74
Cloud.....	22	Lincoln.....	14	Seward.....	7
Coffey.....	14	Linn.....	17	Shawnee.....	81
Comanche.....	6	Lyon.....	16	Sheridan.....	4
Cowley.....	35	Marion.....	25	Sherman.....	1
Crawford.....	29	Marshall.....	31	Smith.....	10
Decatur.....	4	Meade.....	10	Stafford.....	20
Dickinson.....	42	Miami.....	21	Stevens.....	2
Doniphan.....	17	Mitchell.....	17	Sumner.....	33
Douglas*.....	789	Montgomery.....	53	Trego.....	4
Edwards.....	7	Morris.....	8	Wabaunsee.....	18
Elk.....	8	Morton.....	4	Wallace.....	2
Ellis.....	3	McPherson.....	29	Washington.....	19
Ellsworth.....	9	Nemaha.....	17	Wichita.....	1
Finnay.....	3	Neosho.....	33	Wilson.....	19
Ford.....	11	Ness.....	9	Woodson.....	8
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Geary.....	9	Osage.....	28		
Gove.....	1	Osborne.....	19		
Graham.....	4	Ottawa.....	29		
Greenwood.....	11	Pawnee.....	9		

Counties, 98.....2,587

BY STATES.

Arkansas.....	4	Kansas.....	2,587	Oklahoma.....	44
California.....	3	Kentucky.....	1	Texas.....	4
Colorado.....	6	Louisiana.....	1	Washington, D. C.....	1
Connecticut.....	1	Missouri.....	164	Washington.....	2
Idaho.....	1	Nebraska.....	4	Wyoming.....	1
Illinois.....	2	New Jersey.....	1	Japan.....	1
Indiana.....	1	New Mexico.....	8		
Iowa.....	2	Ohio.....	1		

Grand total.....2,840

* A large number of students whose names appear in the catalogue as residents of Douglas county are so catalogued because they temporarily reside in Lawrence for the purpose of attending the University.

Table of Graduates, University of Kansas, 1873-1917.

	Graduate School.		College.		Engineering.	Law.		Pharmacy.		Fine Arts.		Medicine.		Education.		Normal department.		Total degrees granted.	Duplicate degrees.	
	M.	W.	M.	W.		M.	W.	M.	W.	M.	W.	M.	W.	M.	W.	M.	W.		M.	W.
1873.					1													4	2	
"74.			2	1	2													3	1	
"75.			2	4	1													7	4	
"76.	1	1	6	2	3													10	5	1
"77.			3	3	1													23	5	
"78.			1	3														6		
"79.	2	1	8	5														18	5	
1880.	1	8	6	5	1	8												31	6	1
"81.	2	1	10	9	1	4					1							34	11	
"82.	1	1	7	3		5												21		
"83.	3	3	12	7	1	4					2							2		
"84.	2	3	11	14	1	8												6		
"85.	1	1	12	5	1	7												41		
"86.	2	2	8	11	1	3												53		
"87.	2	2	15	7	1	12												39		
"88.	3	2	13	4	5	11												4		
"89.	4	4	10	7	4	16												57		
"90.	3	2	11	8	9	25												1		
"91.	3	1	14	7	1	21												56		
"92.	6	3	17	5	4	29												3		
"93.	10	2	29	12	7	42												64		
"94.	6	3	33	22	6	32												58		
"95.	6		31	22	14	47												6		
"96.	3		39	19	8	33												1		
"97.	8		34	21	18	54												3		
"98.	9	4	43	27	18	68												4		
"99.	9	4	49	28	5	89												10		
1900.	10	3	51	38	15	80												119		
"01.	6	9	53	65	13	9												132		
"02.	9	7	54	44	21	44												15		
"03.	13	8	46	52	21	43												178		
"04.	10	4	48	55	18	36												137		
"05.	12	7	56	69	19	30												173		
"06.	10	5	47	60	26	39												226		
"07.	15	12	51	55	64	44												182		
"08.	18	6	50	55	64	44												208		
"09.	17	6	59	84	41	47												197		
1910.	21	8	71	99	49	50												188		
"11.	35	11	80	90	54	48												272		
"12.	30	17	93	103	51	56												251		
"13.	37	18	87	108	58	49												278		
"14.	36	37	102	101	54	63												293		
"15.	40	29	102	112	56	36												349		
"16.	44	31	81	115	47	42												367		
"17.	37	28	85	133	54	50												406		
Totals.	480	283	1,624	1,715	787	1,297	18	436	88	13	237	232	11	16	17	32	56	7,925	521	303

SUMMARY.

Total number of degrees granted.....	7,325
Degrees granted to men.....	4,925
Duplicate degrees.....	521
Number of men receiving degrees.....	4,404
Degrees granted to women.....	2,375
Duplicate degrees.....	503
Number of women receiving degrees.....	2,072
Total number of persons graduated.....	6,509
Number of men deceased.....	247
Number of women deceased.....	100
Total number deceased.....	347
Number of men graduates living.....	4,397
Number of women graduates living.....	2,069
Total number of graduates living.....	6,466
Number of honorary degrees not included above.....	9

DISTRIBUTION OF ALUMNI.

Alabama.....	5	Nebraska.....	59	Alaska.....	4
Arizona.....	23	Nevada.....	4	Bulgaria.....	1
Arkansas.....	27	New Hampshire.....	3	Burma.....	1
California.....	141	New Jersey.....	22	Central America.....	5
Colorado.....	119	New Mexico.....	28	Canada.....	12
Connecticut.....	13	New York.....	119	China.....	8
Delaware.....	2	North Carolina.....	3	Cuba.....	4
District of Columbia.....	37	North Dakota.....	11	England.....	4
Florida.....	26	Ohio.....	31	France.....	1
Georgia.....	3	Oklahoma.....	150	Germany.....	2
Idaho.....	38	Oregon.....	36	Hawaii.....	1
Illinois.....	89	Pennsylvania.....	35	India.....	3
Indiana.....	25	Rhode Island.....	5	Italy.....	2
Iowa.....	36	South Carolina.....	1	Japan.....	7
Kansas.....	3,876	South Dakota.....	7	Korea.....	3
Kentucky.....	6	Tennessee.....	6	Mexico.....	6
Louisiana.....	13	Texas.....	46	Phillippine Islands.....	30
Maine.....	0	Utah.....	29	Scotland.....	1
Maryland.....	7	Vermont.....	2	South America.....	10
Massachusetts.....	51	Virginia.....	9	Tasmania.....	1
Michigan.....	19	Washington.....	89	Turkey.....	1
Minnesota.....	25	West Virginia.....	4	Address unknown.....	146
Mississippi.....	4	Wisconsin.....	26		
Missouri.....	549	Wyoming.....	18		
Montana.....	42	Africa.....	1		
				Total.....	6,173

OCCUPATIONS OF ALUMNI.*

WOMEN.

Educational work:	
Teaching in universities or colleges.....	56
Teaching in secondary schools.....	623
Teaching music.....	73
Farming.....	7
Home makers, married.....	493
Library work.....	18
Medicine.....	15
Office work.....	22
Pharmacy.....	12
Religious work.....	18
Social service work.....	13
Study.....	23
Home makers, unmarried.....	395
Writing or editing.....	10
Miscellaneous occupations.....	85
Occupations unknown.....	101
Total.....	1,964

MEN.

Advertising business.....	10
Banking and investments.....	66
Chemists.....	41
Educational work:	
Teachers or administrators in universities or colleges.....	209
Superintendents, principals of schools.....	112
Teachers in secondary schools.....	121
Teaching music.....	10
Engineering.....	601
Farming.....	94
Government service.....	38
Insurance business.....	34
Law.....	927
Manufacturing.....	16
Medicine.....	371
Mercantile business.....	161
Office holding—county, state, judicial.....	45
Pharmacy.....	336
Railway business.....	23
Real estate business.....	31
Religious work.....	51
Study.....	84
Writing or editing.....	61
Miscellaneous occupations.....	305
Occupations unknown.....	460
Total.....	4,207

* Over four hundred and several women have given up their usual occupations and have enlisted in some form of government service, military, or otherwise.

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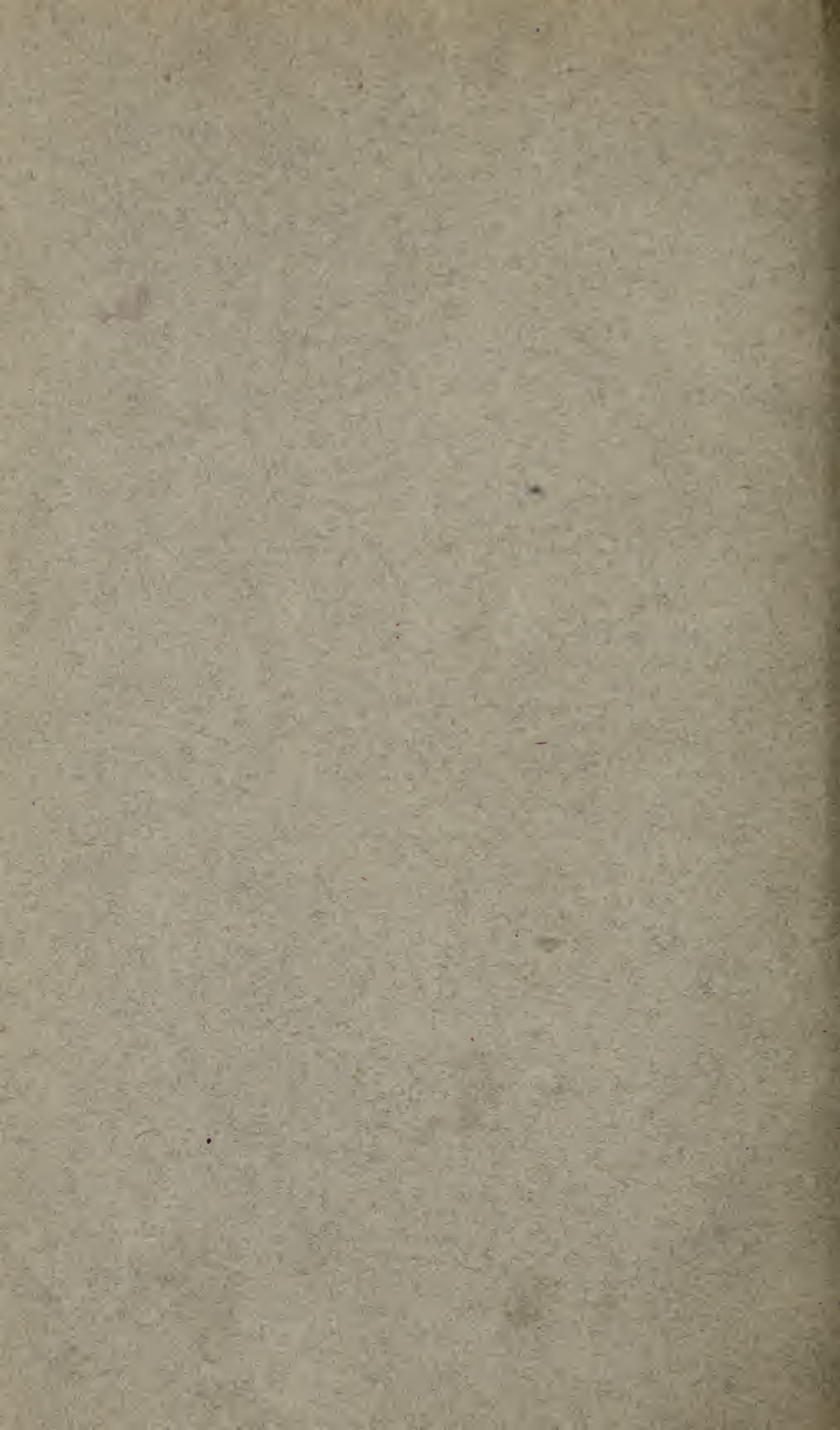
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